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CHARLES ROBERT OSTEN SACKEN,
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CONTENTS

Cockerell—A Remarkable New Dragon-fly from the Eocene (Odonata) 297
Aldrich—A New Species of Oedematocera with Notes on Schistocercophaga Townsend (Dipt.: Tachinidae) 301
Gunder—New Butterflies (Lepid.: Nymphalidae) 304
Chamberlin—Notes on Chilopods and Diplopods from Southeastern Utah 307
McAtee—Verbose Descriptions of Insects 311
Knull—Descriptions af New Species of Acmaeodera (Buprestidae) with Notes on other Coleoptera (Cleridae, Cerambycidae, Platystomidae, Curculionidae) 314
Personal—S. W. Frost 316
Sherman—Request for Letters of Dr. E. A. Schwarz 317
Glover—Ophion chilensis (Hym.: Ichneumonidae) 317
Gunder—Pest Control in Insect Drawers 318
Entomological Literature 319
Review—A Classification of the Higher Groups and Genera of the Coccid Family Margarodidae 325
Obituary—Juan Brèthes 328

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ZACALLITES BALLI—COCKERELL.

ENTOMOLOGICAL NEWS

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A Remarkable New Dragon-fly from the Eocene (Odonata).

By. T. D. A. COCKERELL, Boulder, Colorado.

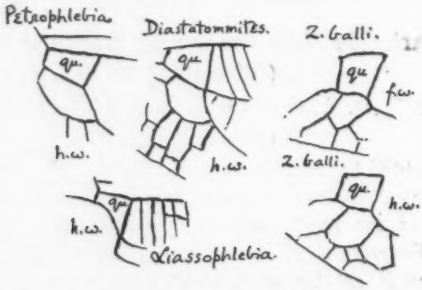
(Plate XIII.)

I am indebted to Professor O. M. Ball, of the Agricultural and Mechanical College of Texas, for the opportunity to describe one of the most magnificent fossil insects which has ever been discovered. It is a large dragon-fly, with the wings outspread as if set by an Entomologist, showing characters which appear to me to place it in a new family of the Anisozygoptera. Professor Ball writes: "It came from an assessment hole above the rim rock in Brushy Creek Canyon about twenty-five miles northwest of DeBeque, Colorado, and was collected by a miner who was at that time working for me." The horizon is Green River Eocene. Professor Ball thinks, but is not quite certain, that the actual discoverer of the specimen was Mr. A. P. Hawxhurst, then of Colbren, Colo.

ZACALLITIDAE new family.

Large Anisozygoptera, apparently related to the Archithemidae of Handlirsch, and perhaps directly descended from them. In Tillyard's work on the British Liassic Dragon-flies, published by the British Museum in 1925, there is a key to the families, in which the new fossil runs straight to Archithemidae, but differs from *Diastatommites* by a number of important characters, such as the lack of a definite specialized anal vein and anal area, the division of the cells beyond the quadrilateral or discoidal (after the first cell), and the form of the subquadrangle. Yet the quadrilateral is strikingly similar, with its upper apical angle acute. From *Selenothemis* our fossil differs in having nearly three times as many cross-veins between nodus and pterostigma, the discoidal not expanding on the apical side, and other features. *Archithemis* has a quite different discoidal, resembling that of *Liassophlebia*. The base of the wing is unknown in *Heterothemis, Liadothemis* and *Oryc-*

tothemis, but the parts preserved show no close affinity.* Tillyard questions the reference of those genera in which the discoidal is similar in upper and lower wings to the Anisozygoptera, thereby differing from Handlirsch. The genus now



described shows no important difference in the discoidals, but in other respects so closely resembles undoubted Anisozygoptera of the Mesozoic, that I do not think it can be excluded from that group. It is however not at all closely allied to the living *Epiophlebia,* though there is more affinity with the Oligocene *Sieblosia* of Bavaria. In *Sieblosia* however the subquadrangle is standardized in the manner of modern forms. The abdomen of *Sieblosia* is proportionately longer than in our insect, but the terminal appendages appear to be about the same. Since Tillyard has described (Trans. Ent. Soc. London, 1928) a typical Zygopteran from the Permian of the Falkland Islands, it is evident that these Anisozygopterous groups had no connection with the Zygoptera during the Mesozoic, and must be thought of as a once wide-spread type now almost entirely extinct. The more modern Anisoptera took their place, beginning with the Gomphidae.

ZACALLITES new genus.

Large insects with the aspect of Anisoptera, the wings probably held horizontally in repose, but the discoidal cell is undivided, and supratriangle and subtriangle are not represented. Head small; thorax stout but rather long; abdomen slender, ordinary for Anisoptera, the anal appendages stout and curved.

[**Zacallites* differs, *i. a.,* from the recently described *Karatawia* (Martynov, Bull. Acad. Sci. Russia, 1925, p. 587, fig. 9), from the Jurassic of Turkestan, in that the latter has the "triangle," or "quadrangle," confluent with the "basal," or "median," cell, as in the case of *Tarsophlebia.* —P. P. CALVERT.]

Nodus before middle of wing; pterostigma well developed, very long. Region beyond the nodus to the apex, and down to the radial forks, essentially as in the Zygopterous *Climacobasis,* though the stigma is considerably longer and the strong sector is conspicuously arched below the stigma. Discoidal cells or quadrilaterals similar in both pairs of wings, the upper apical angle acute, an approach to the Anisopterous type. In the Anisopterous series it approaches nearest to the Gomphidae, and a specially noteworthy feature is the straight (not zigzag) vein dividing the cells after the first beyond the discoidal, that is to say between MA and Cu2 (following Tillyard's revised nomenclature). This feature is observed in the Liassic *Heterophlebia,* except that there it begins four cells away from the discoidal. There is also such a vein in *Liassophlebia,* beginning after three cells from the discoidal. For other details see the description of the species.

The black at the wing-tips recalls species of *Orthemis, Thermochoria* and *Eleuthemis,* not otherwise related.

Zacallites balli n. sp.

Head, thorax and abdomen dark, the basal half of abdomen somewhat paler. Head and thorax about 17 mm. long, head 5.7 mm. wide, thorax 8 mm. wide; abdomen 47mm. long, 3 wide in middle, and 4 subapically. Anterior wing 39 mm. long, about 11 wide in middle, nodus 17 mm. from base; pterostigma 5.3 mm. long. Posterior wing 36 mm. long, 9.7 wide in middle, nodus 14.5 mm. from base, pterostigma 5 mm. long. Wings clear, with the apical margin black or dark brown, the dark color sharply defined, beginning on costa about 12 mm. from apex, and ending in a sharp point about 10 mm. from apex on lower margin; the width of the black in apical region about 3 mm. on anterior wings and nearly 4 on hind. The stigma is enclosed in this dark area, which also includes 7 or 8 costal cells before stigma. The detailed description of the venation is from the anterior wing.

Fourteen or fifteen cross-veins before nodus, and thirty between nodus and stigma, the more apical cells very small. Before the nodus, the cross-veins are not continuous with the next series below, but after the nodus they frequently, though by no means always, are. There are seventeen cells below the stigma, these being very small, and higher than broad. Beyond the stigma the cells are numerous, in two rows. Subnodus very oblique, with R3 separating just below its end, but with a short basal bend, which prevents it from being in a line with the subnodus. In the fork of R2-R3 are four cells before the doubling begins, but on one side the second cross-vein is di-

vided above, making a Y. In the upper division, between R2 and R3, above the strong sector, the cells are very irregular, with three rows below the stigma, the upper two invaded by the black, while on the margin are six rows of very small cells, greatly crowded. In the lower division, below the sector, are twelve cells from the doubling to the further subdivisions, and then about four until there are three rows of cells, and at the widest part (2 mm. wide or high), below the middle of the stigma, are five rows of cells, while on the apical margin are six rows of small cells.

In the apical area there are three rows of cells between R1 and R2. Vein 1R3 arises in the usual manner 12 cells basad of end of subnodus, the last three cells above 1R3 much higher than broad. Beyond the level of the subnodus it runs close to R3, but apically rapidly diverges from it, curving downward, so that the interval forms a broad fan, with five rows of cells in subapical region. The fan is much broader than in *Climacobasis*. R4+5 is a very weak vein, arising at a sharp angle, and bounded below by three and a half square cells before level of origin of 1R3. In its course before the level of the nodus it has one row of square cells above and one below, about 16 below from its origin to level of nodus. In the apical field there is a broad fan above, as in the interval above 1R3. Vein MA is very strong, originating in the usual manner at the arculus, and having a straight course as far as level of nodus, with 19 or 20 cells below it between discoidal cell and level of nodus. Discoidal cell (quadrilateral) diamond shaped, with the upper apical and lower basal corners acute angles, the others obtuse angles; a strong straight vein, beginning in the second cell beyond discoidal cell, running close below MA, with one row of cells between, until the subapical spreading. Basal space not crossed. Subquadrangle not differentiated, merely an elongate (high) oblique cell below discoidal. No supratriangle (such as occurs in the Anisoptera). Vein Cu2 leaves the lower corner of the discoidal cell, at first downward, but rapidly curving and arching upward before the level of the nodus, and reaching the margin 21 mm. from the base of the wing. In the region below the arculus it is separated from the margin by two rows of cells, but at the widest part are about seven cells between it and the margin, and below it are two quite distinct curved sectors. Anal zigzag. The cubitoanal area in front wing is 4 mm. across at widest, in hind wing 5 mm.; a character of Anisozygoptera.

According to present estimates of geological time, the interval between the Lias and Upper Eocene must be over fifty

million years. It is evident that in the evolution of insects new types have arisen without necessarily displacing the old, and this has happened more easily because the great multitude of situations occupied by insects affords opportunities for success to innumerable diverse species. Among the discoveries possible to entomologists, few are more interesting than surviving relics of nearly extinct groups, and these may be found either as fossils or in the living fauna.

The figures of the discoidals and adjacent cells of Liassic genera are copied from Tillyard. The beautiful photograph (Plate XIII), enlarged rather more than one half, is the work of my colleague, Mr. Paul F. Shope.

The specimen will be placed in the collection of the A. & M. College of Texas, College Station, Texas.

A New Species of Oedematocera with Notes on Schistocercophaga Townsend (Dipt.: Tachinidae).

By J. M. Aldrich, National Museum, Washington, D. C.

Besides *Hypostena flaveola* Coquillett, the type species, this genus contains *Hypostena gilvipes* Coquillett and the recently described *Oedematocera dampfi* Aldrich (Proc. Ent. Soc. Wash., vol. 29, 1927, p. 17). The last is a widespread and common parasite of the tropical Migratory Locust, *Schistocerca paranensis* Burmeister. *Gilvipes* has been reared from a cricket in Kansas (sent for identification by Professor S. J. Hunter). The host relations of *flaveola* are unknown, as are those of the new species here described.

Oedematocera striata new species.

Female.—Front at vertex .30 of head width, the eyes diverging very gradually and uniformly, so that just above the vibrissae they are separated by .48 of the head width. Pollen of head distinctly yellow on parafrontals and posterior orbits, silvery on parafacials; cheek about one-eighth of eye height, reddish; palpi and proboscis yellow; parafacials narrow, on lowest part only one-third as wide as third antennal joint. Antennae red at base, gradually infuscated on third joint, which is of ordinary width and four times the third; arista bare, reddish at base, thickened on about the basal fourth, basal joints short; facial ridges sharp, with some small hairs below. Ocellars proclinate, divergent; the usual two pairs of orbitals.

Thorax black in ground color, heavily overlaid with yellowish

white pollen, but with two well-defined dark brown stripes, which include the dorsocentrals and reach nearly to the scutellum; a diagonal brown area behind and above the front coxae, and the scutellum bordered with brown; acrostichal 2, 2; dorsocentral 3, 3; sternopleural 1, 1; scutellum with three lateral, a smaller non-decussate apical, and small discal. Prosternum bare.

Abdomen shining brownish-black above, basal half or less of second and third segments with silvery-white pollen, which is wider on venter; fourth segment almost covered with pollen, the tip reddish; first segment without median marginals, second with discal and marginal pair, third with discal pair and marginal row of six; fourth with discal row and a few smaller marginals.

Legs yellow on coxae and base of femora, the rest brown. Mid tibia with one bristle on outer front side, front tibia with two on outer hind side.

Wings yellowish brown, first posterior cell open at apex; third vein curving backward near tip; fourth with rounded oblique bend, concave near tip. Hind crossvein joining fourth at three-fifths of distance from small crossvein to bend; several stout spinules at base of third vein; no costal spines. Calypters pale yellow. Length, 5.6 mm.

Described from one female, collected at Cabima, Panama, May 22, 1911, by August Busck.

Type.—Female, Cat. No. 41109, U. S. N. M.

The species differs very little from *Oedematocera dampfi* Aldrich except in the strikingly vittate thorax.

Townsend (Ent. News, xxxix, 1928, p. 152) has proposed the new genus *Schistocercophaga,* with *Oedematocera dampfi* as type. His description is in the form of a comparison,—"Differs from *Hypophorinia* as follows," etc. Unfortunately, he does not give a reference to the description of *Hypophorinia;* it was described by him in Revista Museo Paulista, vol. xv, 1926, p. 279. The term "described" can be used only in a qualified sense, as the student, after tracing down the reference, will find the name proposed in a key with no description except the couplets of the key, which are composed in a jargon of Portugese and Latin abbreviations*. The genotype (of course

*Townsend's abbreviations were discussed in the taxonomic section of the International Zoological Congress at Ithaca last August and it was voted unanimously (about twenty-five entomologists being present, representing several countries) that such abbreviations should be prohibited.

there is only one species) is *hyphena* new species, from the vicinity of Sao Paulo, Brazil, which is described in seven lines of the same composition. Nothing could be more hopeless than the effort to identify the genus; hence the description of *Schistocercophaga,* for those who do not have specimens of *dampfi* at hand and identified, can have no meaning. It is apparent that Townsend had no such specimens when he drew up his generic characterization, as he cites none and mentions only characters used by me in describing the species. How much simpler for other dipterists if he had made his comparison with *Oedematocera.* Even if one had a correctly named specimen of *Hypophorinia* as a basis, the statements regarding differences cannot be relied on, as I have many times found by comparing Townsend's genotypes, that in a paragraph of this kind he begins with differences, but at some point he changes to resemblances without indicating the fact.

Referring to the relationships of *dampfi,* Townsend says, "It evidently belongs in the tribe Phoriniini and is far removed from *Oedematocera.*"

There is no definition of a tribe Phoriniini in literature, but we may assume that the genus *Phorinia* at least would be a member of it. The genotype of *Phorinia* is the European *aurifrons* Robineau-Desvoidy, of which the National Museum possesses two males determined by Villeneuve. On comparing *dampfi* with *aurifrons,* it is clear that I made a complete failure in describing the former, or else that Townsend knows nothing about *Phorinia.* I note the following principal differences: (1) *aurifrons* has the first posterior cell ending far before the tip of the wing, *dampfi* in the tip; (2) *aurifrons* has the facial ridges bristly almost to the level of the arista, *dampfi* has only small hairs on lower fourth; (3) *aurifrons* has the penultimate joint of the arista conspicuously elongated, several times as long as thick, while *dampfi* has it short; (4) *aurifrons* has the eyes densely hairy, *dampfi* has them bare; (5) *aurifrons* has the frontals descending below level of arista, in *dampfi* they reach only to the base of the antennae.

On the other hand, *dampfi* agrees well with the genotype of

Oedematocera (*flaveola* Coquillett) and I have no doubt of the correctness of the generic reference. The male of *flaveola* has abnormally large antennae, changing the shape of the head considerably; in a case like this it is the female which should be relied on for the generic character, and it is the female which agrees with *dampfi*.

Key to Species of Oedematocera.

1. Mesonotum with two distinct, broad blackish stripes, which include the dorsocentral bristles.....*striata* new species.
   Mesonotum only very narrow, inconspicuous stripes, if any .....2.
2. Prosternum with a pair of delicate, hairlike bristles *gilvipes* Coquillett
   Prosternum bare .....3.
3. Abdomen wholly yellow .....*flaveola* Coquillett.
   Abdomen with broad median blackish stripe, connected with blackish posterior margins on the segments..*dampfi* Aldrich.

New Butterflies (Lepid.: Nymphalidae).

By J. D. GUNDER, Pasadena, California.

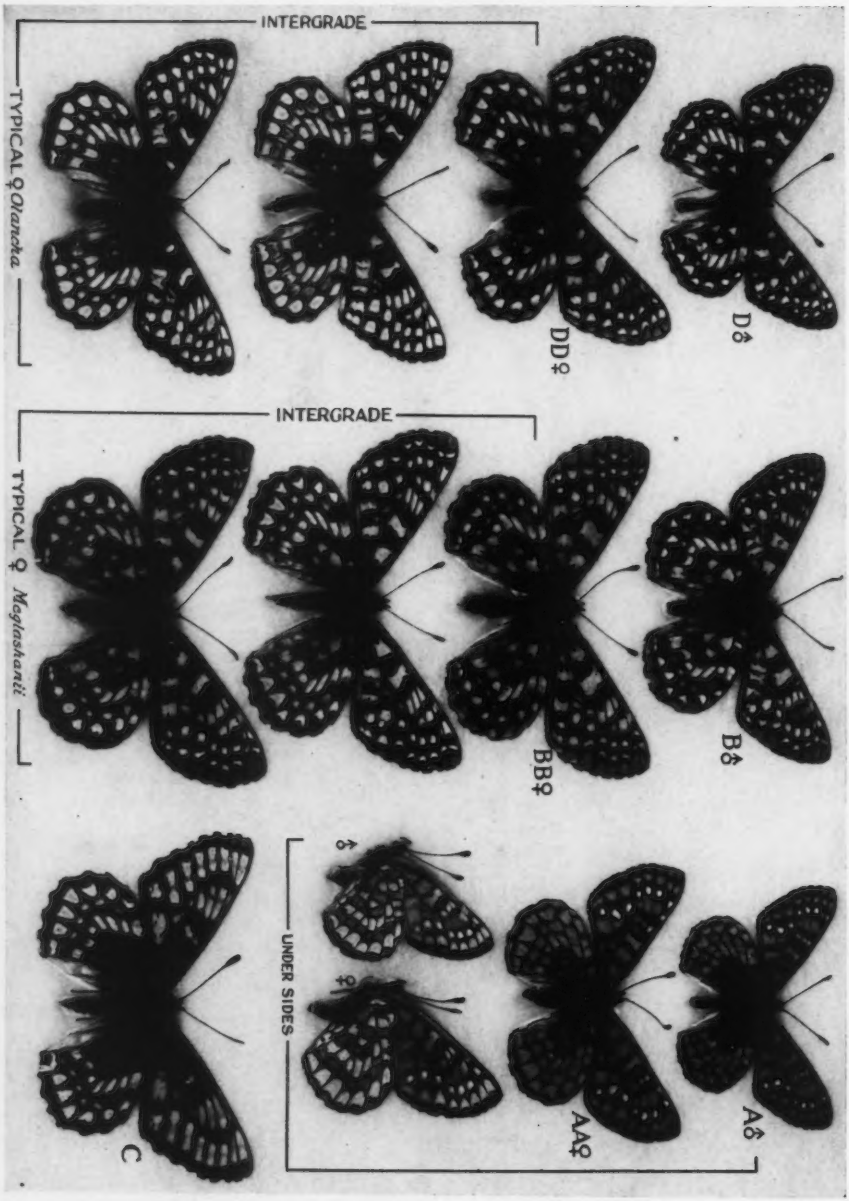
(Plate XIV.)

Euphydryas morandi n. sp. Fig. A ♂ and AA ♀.

Sexes similar. Constant in size and wing-shape to *Euphy. maria* (Skin.) and to *Euphy. wheeleri* (Hy. Edw.). The ground color of the former is dull brick-red and that of the latter is a peach-pink tint. This new species differs from both and from all other typical American *Euphydryas* in being a yellow-brown or dark ochre shade and has no suggestion of a red or pink tinge. In this respect it is unique, except for the tr. f. *omniluteofucus* Gun. of *Euphy. chalcedona* (Dbldy. & Hew.)—(see Ent. News, July, 1925).

Regarding the upper surfaces. A distinguishing peculiarity is the dark heavily marked basal and cell areas of the secondaries with no rectangular white bars or flares extending outward therefrom; also no white spotting. On the primaries, there is a single submarginal row of round white spots well in and heavily black guarded. The usually expected white dashes or marks occurring within or near the cell are absent or quite inconspicuous.

On the under sides, the arrangement of the white maculation, black lines and ochre ground color is similar to most of the related group. The under sides are shown on the accompanying plate also in both sexes.



NEW BUTTERFLIES—GUNDER

Occasional specimens in a series of this species show a tendency towards heavier black maculation which gives to those grading individuals a much darker appearance. This is in no sense a fusion, but simply a uniform broadening of all the dark design.

Classification: For the time being and because of the status heretofore accorded *maria, alena, wheeleri,* etc., I am describing this colony as a species. It is nearest *wheeleri* (Hy. Edw.).

Data: Average expanse—♂, 35-40 mm.; ♀, 40-46 mm. *Holotype* ♂ (fig. A), expanse 37 mm. *Allotype* ♀ (fig. AA), expanse 42 mm.; July 12, 1928; Kyle Canyon only at 10,500 to 11,000 feet on Mt. Charleston Peak in Spring Mountain, Clark County, Nevada. Types in author's coll. *Paratypes* 18 ♂ and 9 ♀, July 10 to 16, same locality. One pair paratypes deposited in Barnes coll., Decatur, Ill., and one pair in National coll. at Ottawa, Can. All specimens collected by Mr. Frank Morand, of Los Angeles, Calif., after whom they are named.

Notes: Mt. Charleston is in the extreme southern part of Nevada and only about 20 miles from the California line. Las Vegas is the nearest town and a desert village. The ascent to near the summit where these specimens were taken is quite difficult and none were seen at a lower altitude. No other *Euphydryas* was reported on the mountain.

EUPHYDRYAS CHALCEDONA (Dbldy. & Hew.), race MCGLASHANII (Riv.), forma **truckeensis** nov. Fig. B ♂ & BB ♀.

Differs in both sexes from typical *mcglashanii* (Riv.) by the spread and domination of the red color over the outer portion of the wings on the upper sides. The red areas of the under sides remain about the same. Usually the outer marginal red spots on the upper sides become broadened or fuller at the expense of the black. The first and second submarginal rows of white spots on the secondaries become red or take on a decided redish tinge. The black cell spots of both wings also show flushes of red.

The plate illustrates the sequence or intergrade of red color graduating from a typical ♀ *mcglashanii* up to the designated ♀ allotype form. Truckee specimens do not show a further advance of red color at least. The males also grade like the females.

Classification: Form *truckeensis* is the connecting link between *mcglashanii* and *sierra* (Wri.).

Data: *Holotype* ♂ (fig. B), expanse 47 mm., July 18, 1925, Truckee, Calif. (Dodge); *Allotype* ♀ (fig. BB), expanse 52 mm., June 28, 1928, Truckee, Calif. (Cottle). Types in author's collection. *Paratypes*: 1 ♀, same date and locality as allotype in James Cottle collection, SF. 2 ♀ in author's collection, dated July 18, '26? Truckee (Cottle) and July 18, 1916, Truckee (Dodge).

EUPHYDRYAS CHALCEDONA (Dbldy. & Hew.), race MCGLASHANII (Riv.), forma transit. **hilli** nov. (Fig. C.)

All rows of white spotting on both upper and under sides tending to join together with the gradual disappearance of the transverse black lines. This fusing of the white maculation through the interspaces is after the fashion of *Euphy. chalcedona fusimacula* (Barnes) and others.

Classification: transition form; albifusism—primaries well developed, secondaries not so much so.

Data: *Holotype* ♀ (fig. C), expanse 53 mm.; Auburn, Calif. (nr. Truckee), July 12, 1928 (Hill). In author's collection and named after Chas. Hill of Glendale, Calif.

EUPHYDRYAS CHALCEDONA (Dbldy. & Hew.), race OLANCHA (Wri.), forma **georgei** nov. Figs. D. ♂ & DD ♀.

White maculation of both sexes similar to typical *olancha,* but having the second submarginal row of white spots on the upper side secondaries broadly suffused with red. This red also fuses over the 3rd. rectangular mixed row on the primaries. The primaries show more red tinting than the secondaries. Also the internal black spots of the cells of both wings have red centers. The under sides record little change in disposition of red color. Both sexes intergrade to typical *olancha;* only that of the female is shown on the plate.

Classification: A form of race *olancha* (Wri.) approaching what is at present termed *wheeleri* (Hy. Edw.) of the Mono Lake region. Taken with *olancha* (Wri.).

Data: *Holotype* ♂ (fig. D), expanse 40 mm.; *Allotype* ♀ (fig. DD), expanse 47 mm.; Casa Diablo Hills, Mono Co., Calif. (Malcolm), June 23, 1925. In author's collection. *Paratypes*—2 ♂ and 2 ♀, same date and locality in collection of Geo. Malcolm and author. Named after Mr. George Malcolm, of Los Angeles, our veteran collector of the High Sierras of California.

Notes on Chilopods and Diplopods from Southeastern Utah.

By RALPH V. CHAMBERLIN, University of Utah.

During April of the present year a field party from the Departments of Zoology and Botany of the University of Utah, consisting of twelve students and staff members, spent ten days in south-eastern Utah, chiefly in San Juan County. Incidentally to other work, the myriopods listed below were taken. The types of the new species herein described are in the author's collection.

CHILOPODA

Scolopendridae

SCOLOPENDRA POLYMORPHA (Wood). In San Juan County, specimens were taken at Bluff, between Bluff and Blanding, Blanding and Devil's Canyon; in Grand County at Moab; in Emery County at Straight Wash; and in Wayne County at Fruita.

The specimens from these southern localities are notably larger and more brightly colored than those from northern localities, such as in Salt Lake County.

Henicopidae

LAMYCTES PINAMPUS Chamberlin. Specimens of this species, described originally from Nevada, were taken on a previous expedition in Zion National Park (1923).

Gosibiidae

GOSIBIUS ARIZONENSIS Chamberlin. Many specimens taken also on the previous expedition at Lake Navajo, Iron County. The species has not previously been reported excepting from Arizona.

Ethopolidae

Archethopolys gosobius sp. nov.

A species strongly related to *A. bipunctatus* (Wood), which occurs in the northern section of the state and in Nevada. The present species in comparison with *bipunctatus* is readily distinguishable in having the ventral spines of the anal legs uniformly 1, 1, 3, 2, 0 instead of 1, 1, 3, 2, 1; the claw single. Ventral spines of penult legs 1, 1, 3, 3, 2, an accessory claw

present. Coxae of antepenult legs not ventrally armed, the last three pairs dorsally armed. Claw of female genital forceps tripartite; basal spines 3 + 3, with the innermost on each side often much more slender than the others. Prosternal teeth mostly 3—6+6—3 or 4—6+6—4, occasionally with only two teeth ectad of diastema and with seven mesad of it on one side, thus differing from *bipunctatus* in which the teeth ectad of the diastema are normally two, and from *parowanus* in which normally but one. Ocelli mostly in three longitudinal series; e. g., 1 + 5, 5, 2. Antennae long, reaching to eighth segment. Anal legs long and slender. Color in general light brownish yellow with head and caudal segments of orange cast. Length, up to 27 mm.

Locality.—San Juan County, at Devil's Canyon, between Blanding and Monticello. Ten specimens collected April 18 by R. V. Chamberlin and W. J. Gertsch. The *holotype* is a female.

Lithobiidae

TIDABIUS TIVIUS Chamberlin. Many specimens were taken at Moab, Grand County.

LOPHOBIUS SOCIUS Chamberlin. Specimens were taken in San Juan County, at Blanding, Monticello, between Monticello and Bluff, Verdure and Devil's Canyon; in Emery County at Woodside and in Sevier County at Salina.

LOPHOBIUS COLLIUM Chamberlin. Taken in San Juan County at Bluff; in Grand County at Green River; in Wayne County at Fruita; and in Carbon County at Price.

LOPHOBIUS ARIZONAE Chamberlin. Taken in San Juan County at Devil's Canyon, Verdure and LaSal Junction. Not recorded previously from the state.

POKABIUS UTAHENSIS Chamberlin. Several specimens of this form, common in the more northern canyons of the Wahsatch and Uintah Mts., were taken at Fruita, Wayne County.

Oabius sanjuanus sp. nov.

Body, head and antennae light brown, the legs more yellow. Agreeing with *decipiens* Chamberlin and *ineptus* Chamberlin in having the anal legs armed with two claws but differing from those species in having none of the posterior coxae laterally armed. Ventral spines of anal legs, 0, 1, 3, 2, 0. Ventral spines of penult legs, 0, 1, 3, 3, 1. Ventral spines of thirteenth

legs, 0, 0, 1, (2), 1, 1. Prosternal teeth 2+2, small, the line of apices straight or a little recurved. Antennae composed of the usual 20 articles; the ultimate article about equalling the three preceding taken together. Anal leg of male a little inflated but bearing no special lobes or other modifications. Ocelli 5 in two series; thus, 1 + 3, 2. Length, 6.5 mm.

Holotype, a male, taken at Bluff, San Juan County, April 16, by H. P. Critchlow.

JUANOBIUS gen. nov.

Similar to *Simobius* in having in the male a conspicuous subdorsal process at distal end of the fifth joint of the penult legs. It differs from that genus in having the posterior angles of the ninth, eleventh and thirteenth dorsal plates produced and in having the articles of the antennae numerous, typically 32, instead of being fixed at 20. Characters of anal legs not known.

Genotype.—Juanobius eremus sp. nov.

Juanobius eremus sp. nov.

Dorsum light brown, the antennae similar, the legs lighter but caudal pairs darker than the others. Antennae moderate, consisting of 32 articles. Ocelli in three series; e. g., 1, 3, 3, 2. Prosternal teeth 2, 2, or with trace of a third tooth on one side. Coxal pores small, uniseriate, 2, 3, 3 (4), 3. Ventral spines of first legs, 1, 3, 1. Ventral spines of thirteenth legs, 0, 0, 3, 3, 2; dorsal, 0, 0, 3, 2, 2. Ventral spines of penult legs, 0, 1, 3, 3, 2; dorsal, 1, 0, 3, 2, 1. Last pair of coxae armed laterally and dorsally; penult pair armed dorsally only. Fifth article of penult leg in the male obliquely excised on the inner side of the distal and above and there bearing a process a little constricted at base and with distal face oblique. Length, 12 mm.

One male taken at Devil's Canyon, San Juan, April 18, by W. J. Gertsch. The specimen lacks the anal legs.

ANOBIUS CENTURIO (Chamberlin). Many specimens taken in San Juan County at Devil's Canyon and in Grand County at Big Indian Rock, April 18 and 15 respectively. Previously known from New Mexico.

Himantariidae

Haplophilus hesperus sp. nov.

Body slender, gradually attenuated cephalad, more strongly caudad. Yellow in color, with the head light chestnut, the

antennae yellow. Cephalic plate about equal in length and breadth, widest across caudal end. Antennae more nearly cylindrical than usual in this family, all joints excepting the ultimate very short. Claws of the prehensors when closed not reaching anterior margin of head; all joints unarmed. Spiracles all small and circular. Ventral pores in a transversely oblong series on plates of anterior half of body. First legs shorter and more slender than the second. Last ventral plate of moderate width, the sides straight and converging caudad; caudal margin straight. Last coxae with numerous small pores over entire surface excepting a caudal area on lateral surface. Anal legs in female slender, a little longer than the penult. Length, 35 mm.

The *holotype*, a female, was taken at Devil's Canyon in San Juan County, April 18, 1928.

Linotaeniidae

LINOTAENIA CHIONOPHILA (Wood). One specimen taken at Devil's Canyon, San Juan County, April 18.

Chilenophilidae

GNATHOMERIUM XENOPORUS (Chamberlin). Many specimens of this form, widespread in Utah and New Mexico, were taken in San Juan County at Verdure and Devil's Canyon.

WATOPHILUS UTUS Chamberlin. A male and female taken between Moab and LaSal Junction by the author and a female taken at Bluff by W. J. Gertsch.

Unlike the other species as previously known, the number of pairs of legs in the present species seems to be subject to considerable variation. The female holotype, from the La Sal Mts., has 65 pairs of legs, that from between Moab and La Sal 73, and the one from Bluff 81. The male from between La Sal and Moab has 69 pairs of legs.

Geophilidae

Geophilus fruitanus sp. nov.

Cephalic plate without frontal suture. Prebasal plate not exposed. Prehensors when closed not surpassing anterior margin of head; joints short, all unarmed. Spiracles all circular, rather small, the first a little larger than the second. Last ventral plate very wide, the sides strongly converging caudad;

two coxal pits on each side covered by the ventral plate. Anal pores indistinct. Anal legs of female slender, ending in well-developed claws. Pairs of legs 57. Length, 38 mm.

The *holotype*, a female, was taken at Fruita, Wayne County.

This species is related to *G. mordax* Meinert, in having on each of the last coxae two large pits covered by the last ventral plate, but differs in not having the frontal plate discrete and in not having the prebasal plate exposed.

DIPLOPODA.

Craspedosomidae

TINGUPA UTAHENSIS Chamberlin. Two females were taken in Devil's Canyon, San Juan County.

Callipodidae

SPIROSTREPHON UTORUM Chamberlin. Specimens taken in San Juan County at Bluff by Emory Soule and the author and in Emery County at Straight Wash by A. M. Woodbury, W. J. Gertsch and the author.

Parajulidae

PARAJULUS VENUSTUS (Wood). Specimens taken in San Juan County at Devil's Canyon, Verdure and Blanding by A. M. Woodbury, W. J. Gertsch, E. Soule, J. R. Chamberlin and the author.

Verbose Descriptions of Insects.

By W. L. MCATEE, U. S. Dept. of Agriculture,
Washington, D. C.

There are differences of opinion on most subjects, and the topic of long, compared to brief, descriptions of insects, given space in the May, 1928, ENTOMOLOGICAL NEWS*, certainly is no exception to this rule. Since a paper of which I am joint author is used as an example of short descriptions, unsatisfactory to the critic concerned, a reply by me is in order.

In the paper† referred to, the policy as to descriptions is set

* Blatchley, W. S., Vol. 39, No. 5, pp. 146-150.

†McAtee, W. L. and J. R. Malloch, Revision of the American Bugs of the Reduviid subfamily Ploiariinae. Proc. U. S. Nat. Mus., Vol. 67. No. 1, 1925.

forth on pp. 7-8, in a paragraph beginning, "The keynote of descriptions in this paper is avoidance of repetition", and this policy which economizes in writing, typing, editing and printing, and which saves time and expense at every stage of preparation and utilization, would seem to be in little need of defense in these days when the demand for entomological publishing space so clearly exceeds the supply.

The instances of what our critic considers inadequate descriptions as cited in the May, 1928, ENTOMOLOGICAL NEWS are presented in a very misleading way. For instance, there are for *Empicoris orthoneuron* n. sp. on the page cited 84 words of description. There are also two figures illustrating the fore wing, and the male hypopygium. For *Empicoris reticulatus* n. sp. there are 99 words of description on p. 20. For *E. culiciformis* De Geer there are 95 words of description on p. 23, and 2 figures. For *E. errabundus* Say there are 118 words of description and 3 figures.

These statistics include only descriptive matter on text pages. In the key to the species there are the following numbers of words of description applying to the respective species concerned: *E. orthoneuron* 125, *E. reticulatus* 141, *E. culiciformis* 200, and *E. errabundus* 126. In the key to genera are 217 words and in the general description of the genus some 230 words which apply to all of the species, and various descriptive matter in the discussion of characters of the family total more than 300 words of similar application.

The species we are charged with having inadequately described, therefore, have the following totals of words used in describing them in the paper criticized:

Name	Number of descriptive words under				
	Family	Genus	Key	Species	Total
orthoneuron	300	447	125	84	986
reticulatus	"	"	141	99	1,017
culiciformis	"	"	200	95	1,072
errabundus	"	"	126	118	1,021

The writer is rather shocked to learn that on the average

more than a thousand words of description have been devoted to each of these species and feels that the accusation of inadequate description is entirely refuted. The real difficulty more probably was unwillingness of our critic to use our paper according to the principle upon which it was planned, and to expect it to follow, to him, familiar lines. We have no apologies to offer for failing in this respect. The objection to descriptions that refer to other species for comparative purposes seems of no great weight. One cannot safely use any key without having some of the species in hand so that he can be certain he understands the characters mentioned. The tyro cannot expect to grab a bug from a weed and a book from the shelf from which he can get the correct name in a jiffy. Regardless of the questionable desirability of such an achievement, it is and ever will be impossible.

Our critic has scored brief descriptions so we may be allowed to comment on wordy ones. It is self-evident that there is no intrinsic virtue in verbose descriptions. An author may describe an insect by the page, or for that matter by the ream, and still utterly fail to mention characters some later reviser needs to know about before he can place the species. The idea that the "description of every species, new or old, should 'stand on its own bottom' i. e., should be complete within itself," is fallacious, for none but a prophet could foresee what characters will be used by future students and thus be able to mention them in his descriptions.

There is nothing more wearisome and unprofitable than reading long-winded descriptions of insect species which include characters common to the genus, family, or order, and among which it is impossible to discover contrasting passages without the most careful comparison. Such descriptions waste the time of all students, impede progress in the science, and are no less than a taxonomic crime.

A synoptic key alone would be far more useful than wordy descriptions for the purpose our critic exalts, namely, enabling tyros and busy economic entomologists "to find out as quickly as possible the name of some insect at hand." In fact the per-

sons referred to would soon lose themselves in the maze of verbose descriptions and arrive nowhere so far as making a determination is concerned.

It is not entirely out of place to doubt the feasibility of enabling the classes of individuals mentioned to make satisfactory identifications. Everyone who has done any specialized work in insect classification realizes the danger of making determinations in a group with which one cannot claim special acquaintance. Experience in thorough taxonomic work reveals how little we know any of the groups. After every reaccumulation of material any of the groups may prove to be in need of revision, which means that all previous determinations are subject to possible correction. The best course for the non-specialist is to appeal to specialists for names and not to rely on cure-all manuals. Regardless of verbosity no insect manual is of even reliability throughout, none is free from numerous errors, and none is even approximately complete.

Descriptions of Two New Species of Acmaeodera (Buprestidae) with Notes on other Coleoptera (Cleridae, Cerambycidae, Platystomidae, Curculionidae).

By J. N. KNULL, Pennsylvania Bureau of Plant Industry, Harrisburg, Pa.

The types of the new species here described are in the author's private collection.

HYDNOCERA UNIFASCIATA Say. Reared from *Ulmus* branches infested with *Magdalas* and *Psenocerus supernotatus* Say collected at Hummelstown, Pa.

CORINTHISCUS LEUCOPHAEUM Klug. Several adults reared from cypress (*Taxodium distichum*) branches infested with *Curius dentatus* Newn., *Oeme rigida* Say and *Chrysobothris chrysoela* Ill., collected at Cape Henry, Va.

Acmaeodera flavinigrapunctata n. sp.

Form and size of *A. hepburni* Lec., color piceous, distinctly bronzed, thorax with side margin yellow for basal two-thirds,

elytra yellow, with base, umbone, suture and forty small irregular areas which resemble dots to the naked eye, piceous. Head feebly impressed, densely punctured, joints five to eleven of antennae much broader than joints one to four. Thorax about twice as wide as long, sides feebly arcuate, gradually divergent to base, side margin not visible from above except in front, dish with median impression in front of scutellum, a strong lateral oblique impression on each side near base, surface coarsely densely punctured, punctures becoming more numerous at sides, base margined with a corrugated strip, surface densely pubescent. Elytra at base as wide as thorax at that point, sides sinuate, broadly rounded posteriorly, side margins serrate near apex, surface coarsely punctured, intervals flat, uniseriately punctate, each of the smaller punctures containing a short stout hair. Prosternum in front slightly trisinuate, last ventral with a thick subapical plate which is truncate at the end. Length 10 mm., width 4 mm.

Type: ♂ labeled Raymondville, Texas, June 29 and presented to me by Mr. F. M. Hull. This species should stand next to *A. hepburni* Lec. in our list. The new species can be separated from the latter by the markings and shorter pubescence on the elytra and by the more prominent subapical plate.

Acmaeodera hulli n. sp.

Robust, size and shape of *A. squamosa* Van D., color piceous, bronzed, each elytron with four irregular yellow spots, one back of humerus, another median, one back of middle and one near apex. Head coarsely punctured, front convex, densely pubescent, antennae with fifth and following joints broader than first four joints. Thorax wider than long, widest in middle, convex, sides more strongly constricted at base than at apex, side margins not visible from above, surface coarsely punctured, punctures more numerous and confluent laterally, posterior margin with a narrow corrugated strip, surface moderately pubescent with short hair-like setae. Elytra at base as wide as base of thorax, wider than widest part of thorax slightly back of base, sides sinuate, obtusely rounded at apex, strongly serrate on sides near tip, dish convex, with rows of moderately large impressed punctures, each interval with an irregular row of fine punctures, each bearing a squamiform hair. Prosternum truncate, dentate on each side, last three ventral segments densely finely punctate, clothed with long fine hairs which curve forward, no trace of a subapical crest on last ventral segment. Length 8 mm., width 2.5 mm.

Described from one ♀ collected at Mesilla Park, New Mexico, June 27, by Mr. F. M. Hull. This species is probably the same which Professor Fall* referred to from Texas in his discussion of *A. guttifera* Lec. Professor Fall has kindly examined this species and the one preceding.

The new species can be separated from *A. guttifera* Lec. by its more robust form and the vestiture of the dorsal surface. From *A. squamosa* Van D., it can be separated by being more elongate, the lack of convex intervals, the different dorsal markings and vestiture. In our list it should be placed between *A. guttifera* Lec. and *A. squamosa* Van D.

CYLLENE CARYAE Gahan. Larvae of this species were collected in mesquite at Marfa, Texas, by Dr. J. Eyer. Adults were reared by injecting the living larvae into black locust, *Robinia pseudo-acacia,* branches which were used as a host plant for the partly grown larvae.

CYRTOPHORUS VERRUCOSUS Oliv. A living adult was found in a pupal cell in dead tulip poplar, *Liriodendron tulipifera,* wood at Inglenook, Pa., on March 12.

LEPTURGES FACETUS Say. Reared from dead black oak, *Quercus velutina,* branches collected at Harrisburg, Pa.

ECYRUS DASYCERUS Say. Reared from the branches of a dead honey locust, *Gleditsia triacanthos,* collected at Rockville, Pa.

ORMISCUS SALTATOR Lec. Reared from dead willow, *Salix,* branches collected at Harrisburg, Pa., by Champlain and Knull.

EUSPHYRUS WALSHI Lec. Reared from the branches of dead elm, *Ulmus,* collected at Hummelstown, Pa.

ACALLODES VENTRICOSUS Lec. Adults were found numerous at Inglenook, Pa., on June 7, feeding on the foliage of *Steironema ciliatum.*

Personal.

Mr. S. W. Frost is leaving New York, January 10th, 1929, for Panama where he will spend six months collecting and studying leaf-mining insects. He may also go into Costa Rica and Guatemala.

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* H. C. Fall, Jour. N. Y. Ent. Soc., V. 7, p. 33, 1899.

Request for Letters of Dr. E. A. Schwarz.

I would like to assemble (borrow) all available letters from the late Dr. E. A. Schwarz with a view to publishing a selection of the most interesting ones as a memorial to him. JOHN D. SHERMAN, JR., 132 Primrose Avenue, Mount Vernon, New York.

Ophion chilensis (Hym: Ichneumonidae).

Hail, *Ophion chilensis* Spin! You have evidently come from far off Chili to live in North America and we gladly welcome you! When we first laid eyes upon you three years ago near San Diego, California, we were indeed surprised! We never thought that you would migrate quite so far from your South American aboriginal home! We could hardly believe our eyes when at last you were identified as being *Ophion chilensis* Spin!

Just how long you have been in North America (Calif.) we do not know, but probably only a few years. *Chilensis* has evidently come to stay. He is only an inch long, yet is a real Ichneumon aristocrat—delicate, refined! He is a night flier—at least we have never so far seen him in the daytime. He keeps company with moths and lace-wings and other nocturnal insects around electric lamps, hiding in the shade during the day. His flight is unsteady, bumping against this and that and never failing to take a sly bite at one's fingers, if he can do so! We have sent him to Stanford University, to the San Diego Natural Hist. Soc., and to the National Museum, Wash., where he is being studied by Mr. Sumner, specialist in Ichneumons.

Chilensis loves hot weather and disappears when days and nights grow too cool for him, as it so often does in Southern California. In the warm evenings of early Spring this year he was quite plentiful on our porch, but the long spell of cold evenings and cloudy days has driven him to cover.

The wings of *chilensis* are so characteristic of him that even an amateur can always readily identify him by their venation, even if not so easily by other specific marks. A glass of 6-8 diameters is needed in order to see clearly the venation. *Chilensis* is a very fascinating Ichneumon!

ALFRED K. GLOVER, San Diego, California.

[On sending proof of this note to the author, we were shocked to learn from Mrs. Glover that her husband passed away on September 16, 1928. We tender her our respectful sympathy.—EDITOR.]

Pest Control in Insect Drawers.

Even the best made insect boxes do not for ever keep out harmful insect pests. Every collection, no matter how well it is housed, needs attention now and then to preserve it from the ravages of *Dermestes* (a beetle) in its larval stages. The cheapest thing to use in boxes as a preventive is crushed moth-balls, although these have not a very great fumigation strength. Naphthaline flakes (sold by druggists) are much better. The snowy white kind, not the pinkish stuff, should be demanded.

I find the best and strongest disinfective to use continually is Paracide (para-dichlor benzene), a trade marked product made by Hooker Electrochemical Co., of Niagara Falls, New York. The substance looks like crushed moth-balls, but has a far greater fumigation value. It is put up in one or five pound tins as shown by fig. 1. It sells for about 35 cents a pound tin and your local druggist can order it for you from his wholesale house. To quickly kill *Dermestes* in a badly infected box use bi-sulphide of carbon, U. S. P., (poison and inflammable), a clear, ill-smelling liquid sold by druggists. This may be poured over a piece of cotton and then pinned in the corner of the box. I have found that I can apply this liquid directly to the bodies of butterflies without harm. Fig. 2 shows a small oil can which is handy for this purpose as it allows a drop or two to come out at a time. These small oil cans are sold by any Woolworth or Kresge store for 10 cents each. They keep the liquid from evaporating when not in use. Do not apply bi-sulphide directly to the bodies of moths or other hairy insects, or to type specimens.—J. D. GUNDER, Pasadena, California.

Entomological Literature

COMPILED, WITH THE ASSISTANCE OF "BIOLOGICAL ABSTRACTS," UNDER THE SUPERVISION OF E. T. CRESSON, JR.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species will be recorded.

The numbers **within brackets** [ ] refer to the journals, as numbered in the list of Periodicals and Serials published in the January and June numbers (or which may be secured from the publisher of Entomological News for 10c), in which the paper appeared. The number of, or annual **volume,** and in some cases the part, heft, &c. the latter **within** ( ) follows; then the pagination follows the **colon** :

All continued papers, with few exceptions, are recorded only at their first installments.

*Papers containing new forms or names have an * preceding the author's name.

(S) Papers pertaining exclusively to neotropical species, and not so indicated in the title, have the symbol (S) at the end of the title of the paper.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

☞ *Note the change in the method of citing the bibliographical references, as explained above.*

Papers published in the Entomological News are not listed.

GENERAL.—A.—Malices et stratagèmes chez quelques insectes. [98] 55: 56-58. **Abel, O.**—Neuere forschungen über die herkunft und stammesgeschichte der primaten. [Verh. Zool.-Bot. Ges. Wein] 78: 39-45. **Aurivillius, C.**—Obituary. [63] 42: 294-295. **Brooks, B. T.**—The interpretation of research. [76] 1928: 410-415. **Brues, C. T.**—Studies on the fauna of hot springs in the western United States and the biology of Thermophilous animals. [Proc. Amer. Acad. Arts & Sci.] 63: 139-228, ill. **Collins, J. E.**—The recent growth of interest in Entomological Science and its effect upon Entomologists and Entomological Societies. [Proc. Ent. Soc. Lond.] 2: 106-113. **Crowell, M. F.**—A vial for catching small leaping insects. [12] 21: 632-633, ill. **Donisthorpe, H. K.**—The mouth-parts in some insects. [Proc. Ent. Soc. Lond.] 3: 28-29. **Edwards, F. W.**—Insects taken at sea off the Brazilian Coast. [Proc. Ent. Soc. Lond.] 2: 56-59. **Felt, E. P.**—Insects and health. Dispersal of insects by air currents. [N. Y. State Mus. Bull.] 1928: 5-57, ill.; 59-129. **Felt, E. P.**—Observations and notes on injurious and other insects of New York State. [N. Y. State Mus. Bull.] 1928: 145-176, ill. **Fisk, G. H.**—Insects found under burlap bands. [4] 60: 183-184. **Frickhinger, H. W.**—Die volkswirtschaftliche bedeutung der schädlingsbekampfung. [Der. Nat.] 1928-1929: 284-285. **Hayward, K. J.**—A short description of the Argentine Chaco. [Proc. S. London Ent. & N. H. Soc.] 1927-28: 18-33. **Horn, W.**—Ueber "photostatische" reproduktionen

von literatur-stellen. [49] 17: 153-155. **Horn, W.**—Ueber die 2, "Liegnitzer alten." [49] 17: 307-310. **Janisch, E.**—Die lebens-und entwicklungsdauer der insekten als temperaturfunktion. [94] 132: 176-186, ill. **Johnson, C. W.**—Some common insects of the household. [76] 1928: 343-346. **Johnson, C. W.**—The insect fauna with reference to the flora and other biological features. [Biol. Sur. Mount Desert Reg.] Part 1: 3-247. **Kelsheimer, E. G.**—The preservation of immature insects. [7] 21: 436-444. **Petersen, C. G. J.**—On some biological principles. [Det. Kgl. Danske Vidensk. Selskab. Biol. Medd.] 7: 3-54. **Petersen & Haeussler.**—Response of the oriental peach moth and codling moth to colored lights. [7] 21: 353-375, ill. **Robinson, W.**—Response and adaptation of insects to external stimuli. [7] 21: 407-417, ill. **Report** of the British National Committee on Entomological Nomenclature. [Proc. Ent. Soc. Lond.] 3: 33-45. **Schaum, K. & E.**—Einheimische springende gallen. [88] 16: 761. **Schmidtgen, O.**—Fährten von insekten und wirbeltieren im Perm von Nierstein am Rhein. [Verh. Zool.-Bot. Ges. Wein] 78: 35-39. **Skala, H.**—Futuronerva absurda ?! [14] 42: 118. [Criticism of describing malformations.] **Snodgrass, R. E.**—The mind of an insect. [An. Rep. Smiths. Inst.] 1927: 387-416, ill. **Wade, J. S.**—A bibliography of biographies of entomologists, with special reference to North American workers. [7] 21: 489-520. **Weiss, H. B.**—Some early American papers on entomology. [6] 36: 293-297. **Wightman, A. J.**—Dr. Verity's nomenclature (a rejoiner). [21] 40: 122-123. **Wilson, O.**—The "Hundred-Thousand" insect. [Nat. Mag.] 12: 292-295, ill. [On the making of shellac.]

ANATOMY, PHYSIOLOGY, ETC.—Bugajew, I. I.—Zum studium des baues der Malpighischen gefässe bei den insekten. [34] 78: 244-255, ill. **Comignan, J.**—Note préliminaire sur le rôle de l'olfaction chez Scarabaeus semipunctatus. [25] 1928: 214-216. **Crampton, G. C.**—The basal structures of the wings of certain insects. [19] 23: 113-118, ill. **Davies, W. M.**—The effect of variation in relative humidity on certain species of Collembola. [Brit. Jour. Exper. Biol.] 6: 79-86, ill. **Frew, J. G. H.**—A technique for the cultivation of insect tissues. [Brit. Jour. Exper. Biol.] 6: 1-11. **Ingles, L. G.**—The development of the central nervous system. [13] 20: 55-57, ill. **Lester & Lloyd.**—Notes on the process of digestion in Tsetse-flies. [22] 19: 39-60, ill. **Meyer, E.**—Neue sinnesbiologische beobachtungen an spinnen. [46] 12: 1-69, ill. **Schilder & Schilder.**—Die nahrung der Coccinelliden und ihre beziehung zur verwandtschaft der arten. [Arb. aus der Biol.

Reich. für Land-und Forstwirtschaft] 16: 213-282, ill. **Schmid, B.**—Sichtbarmachung, tierischer Laute. [97] 48: 513-521. **Verrier, M. L.**—Étude anatomique et cytologique d'une cécidie sur Senecio cacaliaster. [24] 97: 19-26, ill. **Welch, P. S.**—The physiology of insects—metabolism. [7] 21: 476-488. **Wirth, W.**—Untersuchungen über reizschwellenwerte von geruchsstoffen bei insekten. [97] 48: 567-576, ill.

ARACHNIDA AND MYRIOPODA.—*Chamberlin & Gertsch.—Notes on spiders from southeastern Utah. [95] 41: 175-187. ***Hilton, W. A.**—The occurrence of a member of the class Pauropoda in California. [13] 20: 65-68, ill. **Hingston, R. W. G.**—Protective devices in spiders' snares. [Proc. S. London Ent. & N. H. Soc.] 1927-28: 15-17. **Hodson, W. E. H.**—Some notes on the bulb mite. [Jour. Min. Agric.] 35: 656-660.

THE SMALLER ORDERS OF INSECTS.—Bugnion, E.—Le dévelopement des soldats termites. [An. Sci. Nat., Zool., Paris] 11: 261-281, ill. ***Goding, F. W.**—Membracidae of South America and Antilles, III. Subfamily Membracinae. [6] 36: 201-233, ill. ***Hood, J. D.**—A new Actinothrips (Thysanoptera) from Brazil. [19] 23: 147-150, ill.

ORTHOPTERA.—Fulton, B. B.—A demonstration of the location of auditory organs in certain Orthoptera. [7] 21: 445-448. ***Hebard, M.**—Studies in the Dermaptera and Orthoptera of Colombia. 5. Orthopterous family Gryllidae. [1] 54: 79-124. **Liebermann, J.**—Preliminares para el estudio de los Acridioideos Argentinos. [An. Soc. Cien. Argentina] 94: 137-158. ***Rehn, J. A. G.**—New or little known neotropical Blattidae. 1. [1] 54: 125-194, ill. **Roberts, R. A.**—Notes on the biology of Stagmomantis carolina (Mantidae). [4] 60: 209-212.

HEMIPTERA.—Balduf, W. V.—Observations on the buffalo tree hopper Ceresa bubalus (Membracidae) and the bionomics of an egg parasite, Polynema striaticorne (Mymaridae). [7] 21: 419-435, ill. ***Ball, E. D.**—Some new genera and species of N. A. Derbidae with notes on others (Fulgoridae). [4] 60: 196-201. **Barber, H. G.**—Ptochiomera or Plociomera? [19] 23: 153. **China, W. E.**—Terminal abdominal processes in a Jassid larva (Jassidae). [Proc. Ent. Soc. Lond.] 3: 21-23, ill. **Clark, L. B.**—Seasonal distribution and life history of Notonecta undulata in the Winnipeg Region, Canada. [84] 9: 383-403, ill. ***Goding, F. W.**—New Membracidae VII. (S). [19] 23: 137-142. ***Gould,**

G. E.—A new species of Rhagovelia. (Veliidae). [7] 21: 417-418. ***Granovsky, A. A.**—A new genus and species of Aphidae (Homoptera). [10] 30: 113-121, ill. ***Fairbairn, V. M.**—The genus Hymetta (Cicadellidae). [Jour. Kansas Ent. Soc.] 1: 84-92, ill. **Fairbairn, V. M.**—The life history of Erythroneura ziczac (Cicadellidae). [Jour. Kansas Ent. Soc.] 1: 79-84. ***Harris, H. M.**—Anent Blatchley's manual of Heteroptera, with description of a new Nabid therefrom. [19] 23: 143-146. **Hottes, F. C.**—Borderline aphid studies. [95] 41: 133-138. ***Hungerford, H. B.**—Note on Plea. [19] 23: 132. ***Hungerford, H. B.**—Notonecta reuteri, new name for Notonecta scutellaris. [19] 23: 128. ***Hungerford, H. B.**—Some Corixidae from Northern States and Canada. [4] 60: 226-230, ill. **Kitao, Z.**—Notes on the anatomy of Warajicoccus corpulentus, a scale insect noxious to various oaks. [Jour. Coll. Agric. Imperial Univ. Tokyo] 10: 1-19, ill. ***Knight, H. H.**—A new key for Bolteria with descriptions of two new species (Miridae). [19] 23: 129-132. **Lawson, P. B.**—The genus Driotura and the genus Unoka (Cicadellidae). [7] 21: 449-462, ill. ***Osborn, H.**—Neotropical Homoptera of the Carnegie Museum. Part 6. Report of the subfamily Typhlocybinæ, with descriptions of new species. [3] 18: 253-292, ill. ***Osborn, H.**—The leafhoppers of Ohio. [Ohio Biol. Surv.] 3: 199-374, ill. **Poulton, E. B.**—Notes on Laternaria (Fulgoridae) and other "Lanthorn-flies". [Proc. Ent. Soc. Lond.] 2: 86-88. **Readio, P. A.**—Studies on the biology of the genus Corizus (Coreidae). [7] 21: 189-199, ill. ***Walley, G. S.**—The genus Aphrophora in America north of Mexico (Cercopidae). [4] 60: 184-192, ill.

LEPIDOPTERA.—Box, H. E.—Note upon the larva and pupa of Bungalotis astylos (Hesperiidae). [Proc. Ent. Soc. Lond.] 2: 83-84. **Braun, A. F.**—Phylogenetic significance of the frenulum retinacula in the Gelechioidea. [7] 21: 463-468. **Hagmann, M.**—Raupenzucht. [14] 42: 102-103, ill., (cont.). ***Haimbach, F.**—A list of the species and descriptions of new forms of the American genus Zale and a new form of Safia (Noctuidae, Catocalinae). 54: 215-231, ill. ***Hayward, K. J.**—Migration of insects in Northeastern Argentina, 1928. [9] 61: 210-212. ***Hering, M.**—Neue und alte Heteroceren aus dem zoologischen staatsmuseum Berlin. (S). [63] 42: 268-282. ***Holland, W. J.**—Notes upon some North American species and varieties of the genus Brenthis. 19: 35-45, ill. **Holland, W. J.**—The Argynnids of the Nokomis-group. 19: 15-34, ill. ***Hopp, W.**—Beitrag zur kenntnis der Dalceriden. (S). [63] 42: 283-287, ill. **Liu, C. L.**—On some parasites of the eastern tent cater-

pillar (Malacosma americana). [Bull. Peking Soc. Nat. Hist.] 3: 19-20. ***Meyrick, E.**—Exotic Microlepidoptera. 3: 385-416. ***Meyrick, E.**—Two American species of Laspeyresia. (S). [9] 61: 231-232. ***Michael, O.**—Ueber neue Agriasaberrationen vom Amazonas. [14] 42: 123, cont. **Poulton, E. B.**—An adaption which tends to prevent inbreeding in certain lepidoptera. [Proc. Ent. Soc. Lond.] 2: 75-82; 3: 18-20. **Poulton, E. B.**—Scent-tufts observed in the males of certain Costa Rican lepidoptera. [Proc. Ent. Soc. Lond] 2: 74-75. **Swingle, H. S.**—Digestive enzymes of the oriental fruit moth. [7] 21: 469-475, ill.

DIPTERA. — Bangerter, H. — Mücken-metamorphosen. [56] 7: 156-161, ill. **Bischoff, W.**—Die oekologie der paläarktischen Blepharoceridae. [Erge. und Fort. der Zool.] 7: 209-278, ill. **Box, H. E.**—Observations upon Lixophaga diatraeae, a Tachinid parasite of Diatraea saccharalis, in Porto Rico. [22] 19: 1-6, ill. ***Curran, C. H.**—New eastern species of Medeterus (Dolichopodidae). [N. Y. State Mus. Bull.] 1928: 199-204. ***Curran, C. H.**—Revision of the American species of Archytas (Tachinidae). [4] 60: 201-208. cont. ***Curran, C. H.**—Revision of the American species of Archytas (Tachinidae). [4] 60: 218-226, ill., cont. **Davis, W. T.**—Lucilia flies anticipating death [of their host]. [19] 23: 118. **Dyar, H. G.**—The mosquitos of the Americas. [Carnegie Inst. Wash.] 1928: 1-616, ill. **Edwards, F. W.**—The family position of Pachyneres. [9] 61: 208. **Edwards, F. W.**—Wyeomyia smithi in Newfoundland. [9] 61: 214. ***Enderlein, G.**—Sarcophagiden-studien II. (S). [56] 7: 147-153, ill. **Engelhardt, G. P.**—Note on the breeding of Hermetia aurata. Stratiomydae. [19] 23: 122. ***Felt, E. P.**—A new western gall midge. [13] 20: 58. ***Hendel, F.**—Neue oder weniger bekannte Bohrfliegen (Trypetidae) meist aus dem Deutschen Entomologischen Institut Berlin-Dahlem. (S). [49] 17: 341-370. **Hofeneder, H.**—Ueber die larven der Blepharoceriden und ihren merkwürdigen anheftungsapparat [Verh. Zool. Bot. Gesell. Wein] 77: 82-98, ill. **Kröber, O.**—Neue und wenig bekannte Dipteren aus den familien Omphralidae, Conopidae und Therevidae. [56] 7: 113-134, ill. ***Lindner, E.**—Die ausbeute der Deutschen Chaco-Expedition. III. Ulidiidae. (S). [56] 7: 93-98. ***Malloch, J. R.**—Exotic Muscaridae. (S). [75] 2: 307-319. **Rogers, J. S.**—Notes on the biology of Gnophomyia luctuosa, with descriptions of the immature stages. [7] 21: 398-406, ill. **Rohdendorf, B.**—Beiträge zur kenntnis der Salmacia- (Gonia-) gruppe. (Tachinidae.) [34] 78: 97-102, ill. **Rohdendorf, B.**—Calliphorinen-studien II. [49] 17: 336-338, ill. ***Root, F. M.**—Note on mosqui-

to fauna of the republic of Haiti. [Am. J. Hygiene] 7: 463-469, ill. ***Root, F. M.**—Studies on Brazilian mosquitos. II. Chagasia fajardoi. [Am. J. Hygiene] 7: 470-480, ill. ***Root, F. M.**—Studies on Brazilian mosquitos. IV. Notes on some Brazilian species of Anopheles. [Am. J. Hygiene] 7: 599-605, ill. ***Root, F. M.**—Studies on Brazilian mosquitos. III. The genus Culex. [Am. J. Hygiene] 7: 574-598, ill. **Saunders, L. G.**—Psychoda alternata breeding in the sea. [9] 61: 209. **Smith, F. K.**—Larval characters of genus Dixa. [6] 36: 263-284, ill.

COLEOPTERA.—***Blatchley, W. S.**—Notes on the Rhynchophora of Eastern North America with descriptions of new species, IV, [6] 36: 235-262. ***Boucomont, A.**—Wissenschaftliche ergebnisse der schwedischen entomologischen reise des A. Roman in Amazonas 1914-1915 (und 1923-1924). Scarabaeidae. [83] 19, no. 22: 1-8. ***Brown, W. J.**—Two new species of Bolbocerosoma with notes on the habits and genitalia of other species. [4] 60: 192-196, ill. ***Osiki, E.**—Coleopterorum Catalogus. Pars 97: Carabidae: Mormolycinae, Harpalinae I. 226 pp. ***Fletcher, F. C.**—The Cornell University entomological expedition to South America, 1919-1920. Scientific results, No. 4: Pselaphidae. [1] 54: 69-77. **Frost, C. A.**—Notes on the Coleoptera of 1925. [19] 23: 133-136. ***Gentner, L. G.**—Contributions to our knowledge of North American Halticinae. I. Notes with descriptions of new species (Chrysomelidae). [1] 54: 57-67. ***Hatch, M. H.**—Coleopterorum Catalogus. Pars 95: Silphidae II. 63-244. **Hopping, G. R.**—The western cedar borer. (Trachykele blondeli). [Canada Dept. of Agric.] Pamph. 94: 1-17, ill. **Felt, E. P.**—Three Japanese bettles new to New York State. [N. Y. State Mus. Bull.] 1928: 131-144, ill. **Payne, N. M.**—Cold hardiness in the Japanese beetle, Popillia japonica. [92] 55: 163-179, ill. ***Schaeffer, C.**—The North American species of Hydrothassa with notes on other Chrysomelidae and a description of new species and a variety. [6] 36: 287-291. ***Schenkling, S.**—Coleopterorum Catalogus. Pars 96: Melasidae. 110 pp. ***Spaeth, F.**—Neue Cassidinen aus dem museum zu Stockholm. (S). [83] 19, no. 30: 1-11. **Van Dyke, E. C.**—Callidium pallidum taken in California. [55] 4: 172.

HYMENOPTERA. — **Alpatov, W. W.** — Variation of hooks on the hind wing of the honey bee (Apis mellifera). [92] 55: 209-234, ill. **Balduf, W. V.**—(See under Hemiptera.) ***Bischoff, H.**—Beitrag zur kenntnis der Orussiden.

(S). [56] 7: 175-181. ***Bradley, J. C.**—A revision of the new world species of Trielis, a subgenus of Campsomeris (Scoliidae). 54: 195-214, ill. **Bradley, J. C.**—The species of Compsomeris (Scoliidae) of the Plumipes group, inhabiting the United States, the Greater Antilles, and the Bahama Islands. [Proc. Acad. Nat. Sci. Phila.] 80: 313-337, ill. **Cleare, L. D.**—A method for the rearing of egg parasites of the sugar-cane moth-borers. [22] 19: 31-38, ill. **Cresson, E. T.**—The types of Hymenoptera in the Academy of Natural Sciences of Philadelphia other than those of Ezra T. Cresson. [Mem. American Ent. Soc.] 5: 1-90. ***Fouts, R.**—Notes on the Bethylinae with descriptions of one new Cuban and twelve new North American species. [10] 30: 121-132. **Freudenstein, K.**—Das herz und das circulationssystem der Honigbeine (Apis mellifica). [94] 132: 404-475, ill. ***Frison, T. H.**—A new species of bumblebee from Guatemala (Bremidae). [19] 23: 151-152. **McColloch, J. W.**—The Mutillidae of Kansas. [Jour. Kansas Ent. Soc.] 1: 93-98. **Rau, P.**—The nesting habits of the little carpenter-bee, Ceratina calcarata. [7] 21: 380-396, ill. **Schwarz, H. F.**—Anthidiinae collected mostly in Canada. [4] 60: 212-217. **Viereck, H. L.**—A report on the Hymenoptera in the New York State Museum. [N. Y. State Mus. Bull.] 177-197. **Watson, L. R.**—Controlled mating in honeybees. [73] 3: 377-390, ill.

SPECIAL NOTICES.—Editorial on cactus hedges by J. R. T. B. [19] 23: 154-155. [A protest against an idea proposed in a previously published article which would prohibit the nonprofessional from participation in the study of entomology.] **Opinions** rendered by the International Commission on Zoological Nomenclature. Opinions 98 to 104. [These opinions include reference to Brauer & Bergenstamm; also generic names placed in official list.] [Smith. Misc. Coll.] 73: 1-28.

A Classification of the Higher Groups and Genera of the Coccid Family Margarodidae. Harold Morrison. United States Department of Agriculture, Technical Bulletin No. 52, 239 pp., 116 text figs., 7 plates, July, 1928. I have in earlier reviews and in various other papers expressed a full measure of criticism of the methods that have quite generally prevailed in the systematic work on the scale insects and of the results that have been pre-determined by those methods. It is consequently a most genuine pleasure to come at last upon a piece of systematic work dealing with this group and concern-

ing which nothing can be offered save words of praise and commendation.

Here is a study that approaches about as closely as anyone is likely to come to an ideal expression of what systematic work should be, not only as such work involves insects of the type of the sternorhynchous Hemiptera but as it applies to any group. It is as such a paper, as a contribution demonstrating the possibilities inherent in the combination of a thoroughly qualified student and proper methods of work, even more than as a highly important contribution to the knowledge and understanding of a particular group, that it is especially notable.

As a contribution to the literature on the scale insects it will stand as—up to the present time—the best detailed study dealing with an extensive range of material that we have. There have been papers dealing with individual species or small groups or miscellaneous material—such as some of Morrison's own papers, Herbert's papers on *Matsucoccus,* and a few others—that have been equally well done, but they represent no such sustained effort as this treatment of a large and important group. As such a treatment, it is approached only by Chamberlin's work on the Lacciferidae (Tachardiidae).

The details of the paper are of interest only to special students, but a general statement may be made that will convey to non-specialists some conception of what has been accomplished.

Here is a group of insects that had shared equally with the rest of the Coccidae in the mistreatment to which this family—or super-family or sub-order, call it what you wish—had been subjected at the hands of systematists. It is a group as difficult as any to study because of the problem of obtaining good preparations. Added to this are the remarkable transformations through which some of the species pass in the course of their development and the difficulty of securing adequate material with which to work these out. And there are a fair share of nomenclatorial difficulties. Fortunately, Morrison had at hand type material of a great many species and was able to secure material representing many others.

The classification of the group as a whole was in a very serious tangle. Most of the genera were but vaguely defined. These genera had been aggregated into a series of so-called sub-families that were based upon a very slight knowledge of the actual structures of the insects. But little had been done in the way of determining what are the actual bases for generic and group classification.

Out of this there has been brought order and—in the light of present knowledge—a reasonable classification. The genera

have been clarified and their type species made positively identifiable. Everything that could be done with the available material has been done to take into account the various developmental stages and to consider and weigh the value of all structures that can be found upon the bodies of the insects in good preparations. The illustrations are as numerous, as intelligently worked out, as carefully arranged and lettered and technically as good as can be desired. The lists of genera and species showing synonymy and present disposition of all names within the group are exceedingly useful. The bibliography is in all probability complete.

More than this, what could be asked of any author?

That there are still deficiencies, the author himself realizes. Actually we probably know but a small part of the species that exist and the discovery of new forms may possibly change some of the conceptions as to classification. There are some important species that are still known only from inadequate material. There are some of which the highly important life histories are still to be worked out. But these are not defects of method and they are not a basis for criticism. Only time can remedy these deficiencies.

With some of the author's conclusions there is a possiblity of disagreement. The points, however, are largely academic and have to do chiefly with the rank to be assigned to various groups. For example, I still hold that if the scale insects as a whole be regarded as a super-family the two families Margarodidae and Otheziidae should be placed as subfamilies of a single family, which would necessarily shift the rank of the groups below them. Also there may be disagreement as to the use of the family name Margarodidae. Morrison has accepted the "oldest genus" principle and has rejected priority which would have required the use of the name Monophlebidae. In this particular case, however, it is possibly better to follow Morrison's procedure, for we still know nothing of the genus *Monophlebus,* other than that it belongs to this group.

When such treatments as this exist for all the groups of the scale insects we shall really have a foundation upon which to build the enormous and complex structure that will eventually be necessary to house systematically the thousands of species that still remain to be discovered. And with such a treatment as this available as an example of what can be done by the application of proper methods, there no longer exists any excuse for the type of work that has prevailed in the past. The study of the scale insects is changing. It is coming of age.

G. F. Ferris, Stanford University, California.

OBITUARY

In the Annals of the Scientific Society of Argentina for July-September, 1928, pages 73-79, is an account of JUAN BRÈTHES, with portrait and partial bibliography. Brèthes was born at Saint-Sever, France, February 24, 1871, and died at Buenos Aires 2nd July, 1928. The account does not state how or when he went to South America, but apparently he was in Buenos Aires at the time of the death of Carlos Berg in 1922. At the time of his death, Berg was Director of the Museum of Natural History of Buenos Aires. He was succeeded by F. Ameghino, who considered that it was necessary (since Berg was gone) to have a competent entomologist in the Museum. And so Brèthes was appointed, and remained with the Museum until the time of his death.

The bibliographical list published in connection with this article comprises only those papers published in the Annals of the National Museum and in the Annals of the Argentine Scientific Society. It comprises 62 titles, but Brèthes published many of his papers under other auspices, notably in the Annals of the Agricultural Society of Argentina, in the Magazine of the Museum of La Plata, in *Physis*, and in Carlos Porter's *Revista Chilena*. A complete list of his writings will appear in the *Revista* of the Argentine Entomological Society.

While Brèthes' writings covered a large field in entomology, he wrote especially upon Diptera and Hymenoptera and seemed rather especially attracted to parasitic Hymenoptera. He was, however, more or less of a student of Coleoptera and Lepidoptera, and published certain papers relating to insects of these orders.

While his early writings were justly subject to criticism mainly based on his insufficient knowledge of the literature, his work steadily improved and he achieved a position of some distinction. As a consequence of this, shortly before his death, Dr. Walther Horn had sent him, to work over, certain groups of South American Aculeates from the Deutsches Entomologisches Institut.

L. O. HOWARD.

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The date of mailing the December, 1928, number will be announced on the last page of the issue for January, 1929.

INDEX TO VOLUME XXXIX.

(* indicates new genera, species, names, etc.)

ABBOTT, C. E. Some observations on the behavior of *Cerceris architis* Mickel 205

ALDRICH, J. M. A new species of *Oedematocera* with notes on *Schistocercophaga* Townsend 301

ALEXANDER, C. P. Undescribed species of Crane flies from Chile 180

BAERG, W. J. Some studies of a Trapdoor spider 1

BALL, E. D. Notes on the Cercopidae of America North of Mexico 47

BANKS, N. The C. W. Johnson Collection of Diptera ... 257

BARBER, H. G. Some quantitative results in collecting Hemiptera 194

BARBER, H. S. Thomas Say's unrecorded journey in Mexico 15

BELT, T. Gold Mines of the Naturalist in Nicaragua 22

BLATCHLEY, W. S. Passing the buck in descriptions of insects 146

Two new Anthocorids and a new Microphysid from Florida 85

BRAUN, A. F. Review: Leaf Mining Insects by James G. Needham, Stuart W. Frost, Beatrice H. Tothill 230

BROMLEY, S. W. The monarch butterfly wintering in the Everglades 96

BYERS, C. F. Comments on the Odonata recorded in "A List of the Insects of New York" 229

Florida dragonflies captured by the automobile 236

CALVERT, P. P. Entomology at the "Convocation Week" meetings, Dec. 26 to 31, 1927 (Ed.) 60

Obituaries: Frederick Leonard Washburn, Antonio Berlese 32

Obituaries: Enrico Brunetti, John Hartley Durrant, Lt.-Col. J. W. Yerbury, Gervase F. Matthew, Marquis Henri Du Buysson, Dr. Eugene Amandus Schwarz, Dr. Jean Brethes 295

Review: List of the Insects of New York 135

Review: Zoology of Colorado..... 101
The Fourth International Congress of Entomology (Editorials: two)..... 252
The Labelling of Plates (Ed.)..... 21
CAREY, M. M. Sugaring for Catocala Moths in New Hampshire, August-September, 1927..... 83
CARPENTER, J. F. *Chironomus quadripunctatus* Malloch 186
CAUDELL, A. N. A note on *Tenodera sinensis* Sauss..... 127
CHAMBERLIN, J. C. See Ferris, G. F. and Chamberlin, J. C.
CHAMBERLIN, R. V. Notes on Chilopods and Diplopods from southeastern Utah..... 307
On three Chilopods from the La Sal Mountains of Utah 93
Some Chilopods and Diplopods from Missouri..... 153
COCKERELL, T. D. A. Impressions of the Tring Museum, England 22
The Entomology of Central Siberia..... 80
A remarkable new dragon-fly from the Eocene (ill.).. 297
CRESSON, E. T. JR. Entomological Literature 25, 63, 97, 130 161, 195, 224, 258, 286, 319.
Notes on Mason Collection (Coleop.)..... 104
CUSTER, C. P. Parasites of some Anthidiine bees..... 123
DAVIS, J. J. Bequest to the Entomological Society of America 285
DRAKE, C. J. A Synopsis of the Species of Pachycysta.. 184
DYAR, H. G. A new Corethrella from Panama..... 79
ESSIG, E. O. Invitation..... 152
FERRIS, G. F. The genus *Myialges*..... 137
The larva of *Olfersia vulturis* Van der Wulp..... 36
Review: Classification of the higher groups and genera of the Coccid family Margarodidae..... 325
FERRIS, G. F. and CHAMBERLIN, J. C. On the use of the word "Chitinized"..... 212
FORBES, W. T. M. The first insect described from North America 126
The Tentamen versus the Tentamen names..... 116
To all collectors of New York State Lepidoptera..... 111
FROST, S. W. Notes on Ortalidae..... 169
FULTON, B. B. The Habitat of *Tropidischia xanthostoma* Scudder 8

GLOVER, A. K. *Ophion chilensis* 317
GOE, M. T. Concerning Earwigs 62
GRAENICHER, S. New bees from the Miami region of Florida 279
GUNDER, J. D. New Butterflies (ill.) 304
Pest control in insect drawers (ill.) 318
Unnamable butterflies 201
HAIMBACH, FRANK. New synonymy (Lep.: Saturnidae) 223
Review: On the male of *Dixippus morosus* 292
HIESTAND, W. A. A new type of moth trap 158
Making insect labels with the camera 89
HOLLAND, W. J. The invalidity of the Tentamen names of the butterflies 50
HORN, W. Heteropod-Zoology and entomological complexes 172
HOWARD, L. O. Obituary: Felix Henneguy 136
Obituary: Juan Brèthes 328
Spiders and Bedbugs 251
HUNGERFORD, H. B. Aquatic Hemiptera from New Mexico and Georgia, including a new species of Corixidae .. 156
JOHANNSEN, O. A. Fourth international congress of entomology 220
J[OHNSON], C. W. The Clark Collection of Lepidoptera 23
JORDAN, K. Fourth International Congress of Entomology 59
JUNK, W. See Strand, Embrik, & Junk, W.
KNAUS, W. Coleoptera as guests of other insects and animals 5
KNIGHT, H. H. Descriptions of four new North American species of *Megaloceroea* 247
Remarks on photographic labels for insects 178
KNIGHT, P. Review: The life of the white ant 67
KNOWLTON, GEORGE F. Notes on a few species of *Neothomasia* from Utah 233
KNULL, J. N. Descriptions of two new species of *Acmaeodera* (Buprestidae) with notes on other Coleoptera ... 314
A new species of *Batyle* 126
Two new Cerambycidae 11
LEARNED, E. T. The early stages of *Apantesis vittata* ... 265
LEIBY, R. W. Obituary: Rev. G. H. Manee 68
Review: Histological Technique 31

LINDSEY, A. W. *Hesperia eos* Edwards..... 91
Pyrgus centaureae and *freija*..... 239
MCATEE, W. L. Verbose descriptions of insects..... 311
MANIN, S. Dr. T. V. Ramakrishna Ayyar..... 284
MICKEL, CLARENCE E. A new species of Meloid beetle, with a key to the North American species of the genus *Leonidia* Cockerell..... 38
The biotic factors in the environmental resistance of *Anthophora occidentalis* Cress..... 69
MILLER, D. F. A case of the botfly. (*Bogeria buccata*) as a parasite upon the common house mouse..... 13
NICOLAY, A. S. Obituary: Frank R. Mason..... 102
PARK, O. Bifurcation of antenna in *Balaninus*..... 219
RILEY, W. A. Obituary: Charles Walter Howard..... 167
SHERMAN, F. Assembly of ground beetles..... 24
SHERMAN, J. D. JR. Request for letters of Dr. E. A. Schwarz 317
SMITH, M. R. An additional annotated list of the ants of Mississippi 242, 275
STILES, C. W. Amendments to the international rules of zoological nomenclature..... 128
STRAND, EMBRIK, & JUNK, W. Lepidopterorum Catalogus 285
THIEROLF, WALTER R. The economic importance of *Paratenodera sinensis* 112, 140
TOWNSEND, CHARLES H. T. On the structure, host habit, affinity and geographic range of *Beskia*..... 150
Schistocercophaga, new genus of locust parasites..... 152
TRIMBLE, F. M. Scale insects of Pennsylvania..... 42
WALTON, L. B. A new Endomychid from Florida..... 216
WEISS, HARRY B. Mark Catesby..... 270
The entomology in the Bestiary of Philippe de Thaun.. 119
The Entomology of Sir Thomas Browne's Pseudodoxia Epidemica 33
Some Entomology of Barthomew's De Proprietatibus Rerum 190
WOLCOTT, A. B. Descriptions of new species of North American Hydnocerinae..... 207
YAKHONTOV, V. To authors of entomological papers.... 206

GENERAL SUBJECTS

America, Entomological Society of 285
Animal hosts 5, 13
Antenna, Bifurcation of (ill.) 219
Authors of papers, To..... 206
Automobile, Captures by..... 236
Bequest to the Ent. Soc. of America 285
Biotic factors..... 69
Birds, Parasites of..... 36
Bird nests, Insects in..... 7
Chitinized, Use of the word.. 212
Complexes, Entomological.... 172
Convocation week meetings... 60
De proprietatibus rerum..... 190
Descriptions of insects..... 146
Descriptions of insects, Verbose 311
Disease, Insect-borne 194
Entomology in the bestiary of Philippe de Thaun..... 119
Environmental resistance 69
Evolution, classification, etc. (ill.) 105
First insect described from North America..... 126
Fossil insects..... 297
Fourth international congress of Entomology.....59, 220, 252
Hermaphrodites 201
"Heteropod zoology" and "entomological complexes"..... 172
Hosts, Animal..... 36
Hosts, Insect 5, 40, 69, 138, 150 152.
Insecticide dusting by airplane 257
International rules of zoological nomenclature, Amendments to..... 128
Labelling of plates 21
Labels, Making insect.....89, 178
Literature, Entomological 25, 63, 97, 130, 161, 195, 224, 258, 286, 319.
Metal, Insects made of..... 96
Moth trap, New type of..... 158
Museum reopened..... 235
Naturalist in Nicaragua..... 22
Parasites of bees..... 123
Parasitic insects.....13, 301
Parthenogenesis, regeneration and gynandromorphs 293
Passing the buck in descriptions of insects..... 146
Pest control in insect drawers 318
Plants attacked by insects 42, 314, 316.
Plants visited by insects..... 281
Pseudodoxia epidemica..... 33
Say's unrecorded journey (ill.) 15
Schwarz, Letters of Dr. E. A. 317
Siberia, Entomology of..... 80
Tentamen names, Invalidity of 50
Tentamen versus the tentamen names..... 116
Tring museum..... 22
Yellow fever, Way of acquiring 257

OBITUARY NOTICES

Berlese, A. 32
Brethes, J. 296, 328
Brunetti, E. 295
Buysson, H. du 296
Durrant, J. H. 295
Glover, A. K. 317
Henneguy, F. 136
Howard, C. W. 167
Manee, A. H. 68
Matthew, G. F. 296
Mason, F. R. 102
Schwarz, E. A. 296
Washburn, F. L. 32
Yerbury, J. W. 296

PERSONALS

Ayyar, T. V. R. 284
Ballou, H. A. 62
Blaisdell, F. E. 22
Catesby, M. (Biography).... 275
Clark, B. P. 256
Cockerell, T. D. A. 193, 257

Cooley, R. A. 129
Cushman, R. A. 129
Essig, E. O. 37, 152
Felt, E. P. 157
Frost, S. W. 316
Gahan, A. B. 129
Henshaw, S. 22
Hine, J. S. 223
Holland, W. J. 256
Hungerford, H. B. 193
Johnson, C. W. 257
Lesne, M. P. 284
Osborn, H. 241
Needham, J. G. 22, 256
Porter, C. E. 223
Smulyan, M. T. 284
de Thaun, P. 119
Tillyard, R. J. 62
Van Dyke, E. C. 37
Wolcott, G. N. 129

REVIEWS

Bartholomew: De Proprietatibus Rerum 190
Brown: Pseudodoxia Epidemica 33
Cockerell: Zoology of Colorado 101
Insects of New York, List of 135
Kingsbury & Johannsen: Histological Technique 31
Maeterlinck: Life of the White Ant 67
Morrison: A Classification of the Higher Groups and Genera of the Coccid Family Margarodidae 325
Needham, Frost, Tothill: Leaf-mining Insects 230

GEOGRAPHICAL DISTRIBUTION

Alabama: Lep., 233.
Arizona: Col., 126, 207. Hem., 235, 247.
Arkansas: Arac., 1. Lep., 265.
California: Arac., 139. Hym., 317. Lep., 109, 202, 306.
Colorado: Col., 38, 74. Dip., 73. Hym., 69. Lep., 202, 240. Od., 297.
Connecticut: Orth., 127.
District of Columbia: Hem., 47. Orth., 127.
Florida: Col., 216. Hem., 47, 85, 279. Lep., 96, 203. Od., 236.
Georgia: Hem., 156.
Idaho: Hem., 235, 248.
Illinois: Col., 12. Hym., 205.
Indiana: Col., 186. Dip., 186.
Kansas: Col., 6. Hym., 6.
Louisiana: Dip., 150.
Maryland: Orth., 127.
Massachusetts: Col., 207. Hem., 48. Orth., 127.
Michigan: Col., 220.
Minnesota: Hem., 235.
Mississippi: Col., 244, 278. Hem., 277. Hym., 242, 275.
Missouri: Myr., 153.
Montana: Hem., 248.
Nebraska: Col., 207.
Nevada: Lep., 305.
New Hampshire: Lep., 83.
New Jersey: Col., 207. Lep., 239. Orth., 127.
New Mexico: Col., 6, 207, 316.
New York: Hem., 193. Lep., 111. Od., 229. Orth., 127.
North Carolina: Hem., 49.
Ohio: Col., 13. Dip., 14.
Oklahoma: Dip., 150.
Oregon: Lep., 109. Orth., 8.
Pennsylvania: Col., 314, 316. Dip., 169. Hem., 42. Orth., 113, 127.
South Carolina: Col., 24. Lep., 223.
Texas: Col., 315, 316. Hem., 249.
Utah: Hem., 233. Myr., 93, 307.
Virginia: Col., 314. Hem., 48. Lep., 127. Orth., 127.

Washington: Lep., 109.
Wisconsin: Hem., 48, 235.
Wyoming: Hem., 247.

Africa: Arac., 139.
Canada: Lep., 239.
Central America: Col., 15. Dip., 17, 36, 79, 152, 302. Hem., 17, 185. Myr., 162.
Europe: Arac., 251. Hem., 251. Lep., 239.
Philippine Islands: Arac., 139.
South America: Dip., 180.
Siberia: 80.

ARACHNIDA

anchora, Myialges (ill.)..... 138
Aviculariidae 1
carabivorus, Pachylomerus (ill.) 1
caulotoon, Myialges (ill.)..... 139
Myialges 137
(see also *anchora, caulotoon*)
Pachylomerus (see *carabivorus*)
Sarcoptidae 137
Spiders and Bedbugs..... 251
Trapdoor spider, Studies of (ill.) 1

COLEOPTERA

acomana, Euolectus 6
Acallodes (see *ventricosus*)
Acmaeodera (see *flavinigrapunctata, guttifera, hepburni, hulli, squamosa*)
anthophorae, Leonidia* (ill.).. 38
Aphodius (see *troglodytes*)
Balaninus (see *rectus*)
Batyle (see *rufiventris*)
blanchardi, Hydnocera* 210
blatchleyi, Stenotarsus* (ill.). 217
Carabidae 24
caryae, Cyllene 316
Cerambycidae 11, 126
Cleridae 207
cuneiformis, Hydnocera* 208
Chelyoxenus (see *xerobatis*)
Copris (see *gopheri*)
Corinthiscus (see *leucophaeum*)
Cyllene (see *caryae*)
Cyrtophorus (see *verrucosus*)
dasycerus, Ecyrus 316
delongi, Oberea* 12
Ecitonidia (see *wheeleri*)
Ecyrus (see *dasycerus*)
Endomychidae 216
Elaphidion (see *masoni*)
Euolectus (see *acomana*)
Eusphyrus (see *walshi*)
facetus, Lepturges 316
flavinigrapunctata, Acmaeodera* 314
Fustiger (see *knausi*)
gopheri, Copris 6
gopheri, Philonthus 6
Griburius (see *montezuma*)
Ground-beetles, Assembly of.. 24
Guests, Coleoptera as 5
guttifera, Acmaeodera 316
hepburni, Acmaeodera 315
hispidus, Stenotarsus 217
Hornia (see *minutipennis*)
hulli, Acmaeodera* 315
Hydnocera (see *blanchardi, cuneiformis, mira, puritana, unifasciata*)
Isohydnocera (see *liebecki, mima*)
knausi, Fustiger 6
Leonidia, Key to 38
(also see *anthophorae, neomexicana, rileyi*)
Lepturges (see *facetus*)
leucophaeum, Corinthiscus ... 314
liebecki, Isohydnocera* 211
lurida, Nemognatha 74
Lymantes (see *scrobicollis*)
Mason collection 104
masoni, Elaphidion* 11
Meloidae 38

*mima**, *Isohydnocera* 211
minutipennis, *Hornia* 5, 74
*mira**, *Hydnocera* 207
montezuma, *Griburius* 7
Nemognatha (see *lurida*)
neomexicana, *Leonidia* 5, (ill.) 41
Oberea (see *delongi*)
Onthophagus (see *polyphemi*)
Ormiscus (see *saltator*)
Oxytelus (see *rugulosus*)
Philonthus (see *gopheri*)
polyphemi, *Onthophagus* 6
*puritana**, *Hydnocera* 208
rectus, *Balaninus* 219
rileyi, *Leonidia* (ill.) 41
*rufiventris**, *Batyle* 126
rugulosus, *Oxytelus* 17
saltator, *Ormiscus* 316
sanguinipennis, *Tricrania* 5
scrobicollis, *Lymantes* 15
setosifrons, *Trinodia* 6
squamosa, *Acmaeodera* 316
Stenotarsus (see *blatchleyi*, *hispidus*)
Tricrania (see *sanguinipennis*)
Trinodia (see *setosifrons*)
troglodytes, *Aphodius* 6
unifasciata, *Hydnocera* 314
ventricosus, *Acallodes* 316
verrucosus, *Cyrtophorus* 316
walshi, *Eusphyrus* 316
wheeleri, *Ecitonidia* 6
xerobatis, *Chelyoxenus* 6

DIPTERA

*advena**, *Cryptolabis* 180
Aedes (see *aegypti*)
aegypti, *Aedes* 258
Aelops, *Beskia* 150
annulipes, *Callopistomyia* 170
aurifrons, *Phorinia* 303
Beskia, Structure, host habit, affinity and geographical range of 150
*blanda**, *Corethrella* 79
Bogeria (see *buccata*)
Bombyliidae, Parasites of Some Anthidiine Bees 123
Botfly as parasite upon mouse 13
buccata, *Bogeria* 13
Callopistomyia (see *annulipes*)
Camptoneura (see *picta*)
Chironomidae 186
Chironomus (see *quadripunctatus*)
Corethrella (see *blanda*)
cornuta, *Beskia* 150
corticalis, *Pseudotephritis* 170
Crane-flies from Chile 180
Cryptolabis (see *advena*)
Culicidae 79
Cuterebra (see *Bogeria*)
dampfi, *Oedematocera* ...152, 303
dampfi, *Schistocercophaga* ... 152
daphne, *Spogostylum* 73, (ill.) 124
Euxesta (see *notata*, *nitidiventris*)
flaveola, *Oedematocera* 304
flavidus, *Molophilus* 183
*gymnocladus**, *Molophilus* ... 183
gilvipes, *Oedematocera* 304
Hippoboscidae 36
Hypophorinia 302
Idana (see *marginata*)
Johnson collection 257
Larva of *Olfersia vulturis* (ill.) 36
Larvaevoridae 152
marginata, *Idana* 170
Molophilus (see *monostylus*, *gymnocladus*, *flavidus*)
*monostylus**, *Molophilus* 182
nitidiventris, *Euxesta* 171
notata, *Euxesta* 171
Oedematocera, Key to 304
Olfersia (see *vulturis*)
Ortalidae, Notes on (ill.) 169
Phorinia (see *aurifrons*)
picta, *Camptoneura* 170
Pseudotephritis (see *corticalis*, *vau*)
Pyrgota (see *undata*)

quadripunctatus, Chironomus (ill.) 186
Rivellia (see *viridulans*)
ruficeps, Tephoronota 170
*Schistocercophaga** 152, 301
(also see *dampfi*)
Seioptera (see *vibrans*)
Spogostylum (see *daphne*)
*striata**, *Oedematocera* 301
Tachinidae 150, 152
Tophoronota (see *ruficeps*)
Tipulidae 180
undata, Pyrgota 171
vau, Pseudotephritis 170
vibrans, Seioptera 171
viridulans, Rivellia 170
vulturis, Olfersia (ill.) 36

HEMIPTERA

abjecta, Philaronia 49
angulifera, Lepyronia 49
annulata, Aphrophora 49
Aphididae 233
Aphrophora (see *annulata, saratogensis, signoreti*)
Aquatic Hemiptera 156
Arctocorixa (see *martini*)
Asthenidea 85
(also see *pallescens*)
Bedbugs and spiders 251
bicincta, Monecphora 47
Cardiastethus (see *flaveolus*)
Cercopidae, Notes on 47
championi, Pachycysta 184
*Chinaola** 87
(also see *quercicola*)
Coccidae 42
Collecting Hemiptera 193
Corixa (see *mercenaria*)
Corixidae 156
crassicornis, Euhadrocerus ... 87
*curta**, *Megaloceroea* 247
diaphana, Pachycysta 184
Elathophilus 86
(also see *pinophilus*)
Euhadrocerus (see *crassicornis*)
*flaveolus**, *Cardiastethus* 85
*hirsuta**, *Megaloceroea* 248
infuscata, Philaronia bilineata 49
Lepyronia (see *angulifera*)
*letcheri**, *Megaloceroea* 250
Margarodidae, Classification of 325
*martini**, *Arctocorixa* 157
Megaloceroea (see *curta, hirsuta, letcheri, punctata, rubicunda*)
mercenaria, Corixa 17
Miridae 247
Monecphora (see *bicincta*)
Neothomasia (see *populicola, salicinigra, utahensis*) 233
Pachycysta, Synopsis of Species 184
pallescens, Asthenidea 85
pallidua, Philaronia bilineata.. 49
Philaronia (see *abjecta, infuscata, pallidua*)
*pinophilus**, *Elatophilus* 87
populicola, Neothomasia (ill.) 234
*punctata**, *Megaloceroea* 249
*quercicola**, *Chinaola* 88
rubicunda, Megaloceroea 251
salicinigra, Neothomasia (ill.) 233
saratogensis, Aphrophora 48
Scale insects of Pennsylvania 42
*schildi**, *Pachycysta* 185
signoreti, Aphrophora 48
Tingitidae 184
*utahensis**, *Neothomasia* (ill.) 234

HYMENOPTERA

Andrenidae 279
Anthidiine bees, Parasites on.. 123
Anthophora occidentalis, Environmental resistance 69
anthophorae, Leonidia 73
Ants of Mississippi.....242, 275
Aphaenogaster (see *flemingi, fulva, furvescens, lamellidens, picea*)
aphidicola, Lasius umbratus mixtus 277

Apidae 69
architis, Cerceris, habits of... 205
arenivaga, Prenolepis 278
Behavior of *Cerceris architis* 205
carolinensis, Eciton 245
Cerceris (see *architis*)
chilensis, Ophion 317
Chrysididae 123
crassicorne, Proceratium 244
crawfordi, Heriades* 281
Cremastogaster, (see *minutissima*)
dentigula, Pheidole 245
Dianthidium (see *sayi*)
Eciton (see *carolinensis*)
flemingi, Aphaenogaster texana* 275
floridana, Stelis* 282
Formica (see *melanotica, nitidiventris, succinea*)
Formicidae 242, 275
fulva, Aphaenogaster 246
furvescens, Aphaenogaster texana 275
gilva, Ponera 244
Heriades (see *crawfordi*)
lamellidens, Aphaenogaster .. 246
Lasius (see *aphidicola*)
Lopistes (see *mellifica*)
mandibularis, Osmia 71
Megachilidae 123, 279
melanotica, Formica rufa obscuripes 279
mellifica, Lopistes 17
mellifica, Nectarina 16
minutissima, Cremastogaster.. 277
miranda, Pseudomelecta 73
Monodontomerus (see *montivagus*)
montivagus, Monodontomerus. 72
Nectarina (see *mellifica*)
nitidiventris, Formica pallide fulva 278
occidentalis, Anthophora 69
Ophion (see *chilensis*)
Osmia (see *mandibularis*)
pallipes, Stigmatomma 243
pergandei, Sysphincta 242
Pheidole (see *dentigula*)
Philanthidae 205
picea, Aphaenogaster fulva aquia 275
Ponera (see *gilva*)
Prenolepis (see *arenivaga, testacea*)
Proceratium (see *crassicorne*)
Pseudomelecta (see *miranda*)
pulchella, Strumigenys 277
rufithorax, Triepeolus* 279
sayi, Dianthidium 124
Stelis (see *floridana*)
Stigmatomma (see *pallipes*)
Strumigenys (see *pulchella*)
succinea, Formica pallide fulva 278
Sysphincta (see *pergandei*)
testacea, Prenolepis imparis... 278
Triepeolus (see *rufithorax*)

LEPIDOPTERA

Aberrations in butterflies (ill.) 201
alternata, Amblyscirtes, Hesperia 93
Amblyscirtes (see *alternata, eos, meridionalis, niusl*)
Anosia (see *plexippus*)
Apantesis vittata, early stages (ill.) 265
Arctiidae 265
Breeding, Hints for 152
Callosamia (see *securifera*)
Catocala, Sugaring for 83
centaureae, Pyrgus 239
chalcedona, Euphydryas (ill.) 109 305, 306.
Clark collection 23
Classification of Rhopalocera (ill.) 105
Collectors of New York Lepidoptera 111

colon, Euphydryas chalcedona (ill.) 109
comus, Hesperia, Pamphila, Stomyles, Euphyes 93
Danaus (see *menippe*)
eos, Hesperia, Amblyscirtes.91, 93
Euphydryas (see *chalcedona, colon fusimacula, georgei, hilli, meglashanii, morandi, olancha, mariana, truckeensis*)
Euphyes (see *comus*)
freija, Pyrgus 239
fusimacula, Euphydryas chalcedona (ill.) 109
georgei, Euphydryas* (ill.)... 306
Hesperia (see *alternata, comus, eos*)
Hesperiidae 91, 239
hilli, Euphydryas* (ill.) 306
Lepidopterorum catalogus ... 285
mariana, Euphydryas chalcedona (ill.) 109
meglashanii, Euphydryas (ill.) 305 306.
menippe, Danaus 96
meridionalis, Amblyscirtes ... 93
morandi, Euphydryas* 304
niusl, Amblyscirtes 93
olancha, Euphydryas chalcedona (ill.) 109
Pamphila (see *comus, quinquemacula*)
plexippus, Anosia 96
Pyrgus (see *centaureae, freija*)
quinquemacula, Pamphila 93
Saturnidae 223
securifera, Callosamia 223
Stomyles (see *comus*)
Sugaring for Catocala 83
Tentamen names 50
Trap, Moth (ill.) 158
truckeensis, Euphydryas* (ill.) 305
vittata, Apantesis (ill.) 265
Unnamable butterflies 201
Wintering, Monarch 96

MYRIOPODA

Anobius (see *centurio*)
Archethopolys (see *gosobius*)
arizonae, Lophobius 95, 308
arizonenis, Gosibius 307
brownae, Tiganogona* 154
castanea, Fontaria 155
castellopes, Lophobius 95
centurio, Anobius 309
Chilenophilidae 153
Chilopoda 93, 153
chionophila, Linotaenia 310
collium, Lophobius 94, 308
Craspedosomidae 154
Cryptopidae 153
Diplopoda 154
eremus, Juanobius* 309
eremus, Lophobius 95
Fontaria (see *castanea*)
franciscae, Lophobius 95
fruitanus, Geophilus* 310
Geophilidae 153
Geophilus (see *fruitanus, missouriensis*)
Gnathomerium (see *xenoporus*)
Gosibius (see *arizonensis*)
gosobius, Archethopolys* 307
Haplophilus (see *hesperus*)
helenae, Lophobius 95
hesperus, Haplophilus* 309
*Juanobius** 309
(also see *eremus*)
Lamyctes (see *pinampus*)
lasalanus, Lophobius* 94
Linotaenia (see *chionophila*)
Linotaeniidae 153
Lithobiidae 154
Lophobius, Key to species.... 94
(also see *arizonae, castellopes, collium, eremus, franciscae, helenae, lasalanus, pungonius, socius*)
*Mimuloria** 155
(also see *missouriensis*)
missouriensis, Geophilus* 153

*missouriensis**, *Mimuloria* ... 155
Oabius (see *sanjuanus*)
Parajulus (see *venustus*)
pinampus, Lamyctes 307
Pokabius (see *utahensis*)
Polydesmidae 155
polymorpha, Scolopendra 307
pungonius, Lophobius 95
*sanjuanus**, *Oabius* 308
Scolopendra (see *polymorpha*)
socius, Lophobius 94, 308
Spirostrephon (see *utorum*)
Tidabius (see *tivius*)
*Tiganogona** 154
(also see *brownae*)
Tingupa (see *utahensis*)
tivius, Tidabius 308
utahensis, Pokabius 308
utahensis, Tingupa 311
utorum, Spirostrephon 311
*utus**, *Watophilus* 95, 310
venustus, Parajulus 311
Watophilus (see *utus*)
xenoporus, Gnathomerium 96, 310
Xystodesmidae 155

ODONATA

Anax (see *junius*)
Archithemis 297
*balli**, *Zacallites* 299
bifida, Gynacantha 236
Comments on the N. Y. list.. 229
corruptum, Sympetrum 237
Diastatommites 297, (ill.).... 297
Dragonflies captured by automobile 236
Eocene, Remarkable new dragonfly from the (ill.).... 297
filosa, Somatochlora 237
flavescens, Pantala 238
Gynacantha (see *bifida, nervosa*)
junius, Anax 236
Karatawia 298
Liassophlebia (ill.) 297
nervosa, Gynacantha 236
Pantala (see *flavescens*)
Petrophlebia (ill.) 298
Selenothemis 297
Sieblosia 298
Somatochlora (see *filosa*)
Sympetrum (see *corruptum*)
Triacanthagyna (see *trifida*)
trifida, Triacanthagyna 237
*Zacallites** 299
(also see *balli*)
Zacallitidae* (ill.) 297

ORTHOPTERA

auricularia, Forficula 62
Earwigs, Concerning 62
Dixippus, Experiments on parthenogenesis, regeneration.. 293
(also see *morosus*)
Forficula (see *auricularia*)
Mantidae 112, 127
morosus, Dixippus 293
paranenis, Schistocera, Parasite of 301
Paratenodera (see *sinensis*)
sinensis, Paratenodera 112, 146
sinensis, Tenodera 127
Tenodera (see *sinensis*)
Tettigoniidae 8
Tropidischia (see *xanthostoma*)
xanthostoma, Tropidischia....
(ill.) 8

EXCHANGES

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted—"Check List of the Lepidoptera of Boreal America" by Wm. Barnes and J. McDunnough. Kindly quote price. E. J. Dornfeld, 144 North Ave., Milwaukee, Wis.

Wanted—Moths of any species of the genus **Apantesis:** also eggs or larvae. Will determine specimens. Want to hear from anyone who will collect in this genus. Dr. E. T. Learned, Fall River, Mass.

Wanted—Names and addresses of collectors in foreign countries, also some second-hand insect cases. Write Mrs. Robert Milde, Lewiston, Minn.

Catopini—Catops (Choleva), Prionochaeta, Ptomaphagus. Wanted to borrow all possible specimens of these genera from North America for a revisional study. Correspondence solicited. Melville H. Hatch, Dept. of Zoology, Univ. of Wash., Seattle, Wash.

Chrysomelidae—Cryptocephalinae and Halticinae—will exchange insects of other orders for above named leaf-bettles. Also many duplicates in other groups of coleoptera.—Paul N. Musgrave, 514 Mt. Vernon Ave., Fairmont, W. Va.

Argynnis of the world wanted by exchange for local Lepidoptera, or by purchase. S. P. Hayes, Jr., Amherst College, Amherst, Mass.

Wanted for cash, Catocala eggs: cara, vidua, obscura, residua, ultronia, retecta, praeclara, amatrix, unijuga, pura, insolabilis, lacrymosa, judith.—E. W. K. Schwarz, 40 W. 84th St., New York City.

Wanted—Lepidoptera, especially Lycaenidae and Hesperiidae, from all localities, in exchange for local Lepidoptera. Harold I. O'Byrne, 501 Pacific Ave., Webster Groves, Missouri.

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